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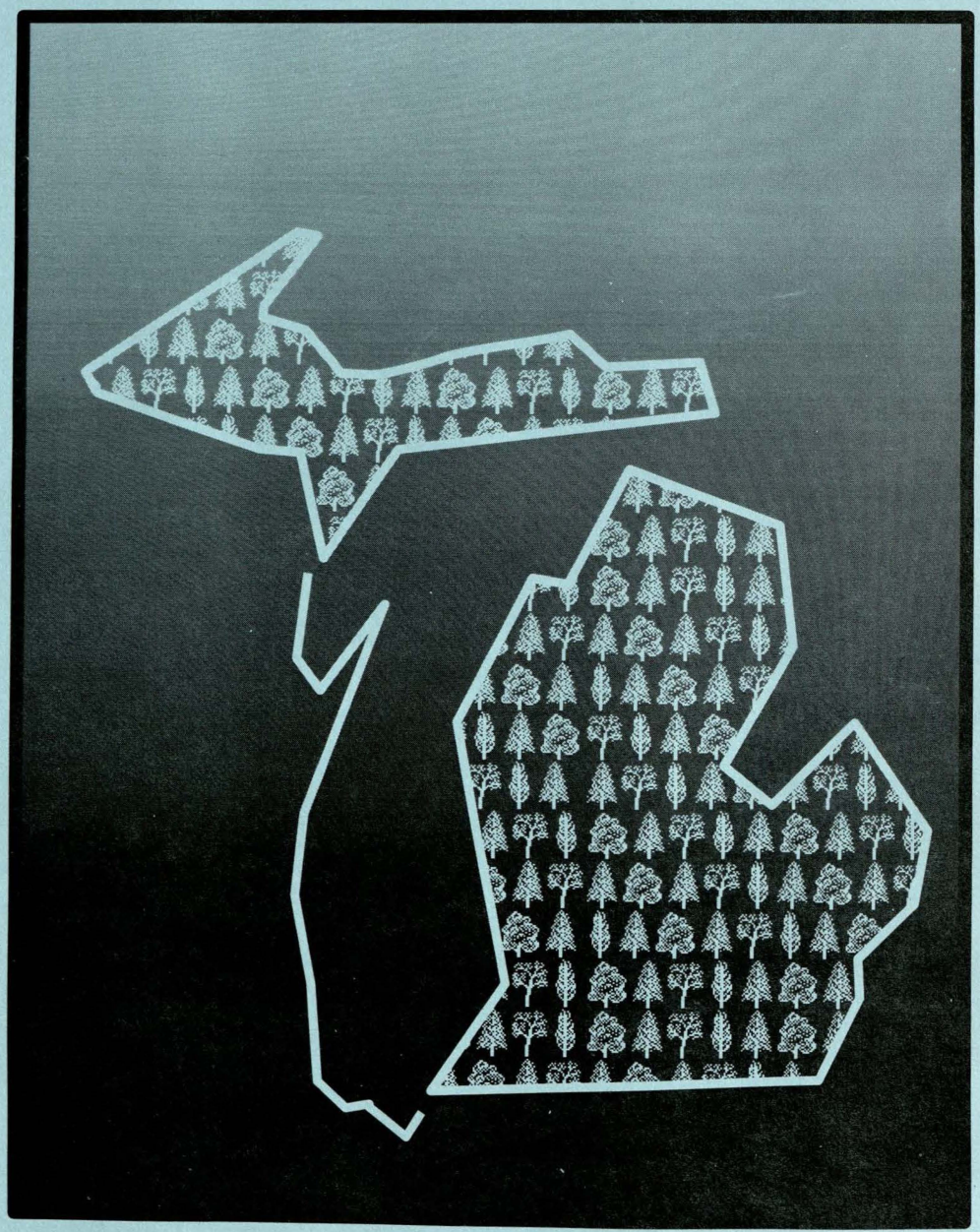
Michigan Timber Industry—An Assessment of Timber Product Output and Use, 1988

W. Brad Smith, Anthony K. Weatherspoon, and John Pilon



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FOREWORD

In this bulletin we discuss recent Michigan forest industry trends and report the results of a detailed study of forest industry, industrial roundwood production, and associated primary mill wood and bark residue in Michigan in 1988. Such detailed information is necessary for intelligent planning and decisionmaking in wood procurement, forest resource management, and forest industry development. Likewise, researchers need current forest industry and industrial roundwood information for planning projects.

Special thanks are given to the primary wood-using firms that supplied information for this study and to the Michigan Department of Natural Resources foresters who canvassed these respondents. Their cooperation is greatly appreciated.

All board foot data in this report have been converted to International 1/4-inch scale by applying a multiplier of 1.08 to all saw log volume reported in Scribner Decimal C scale by sawmills, a multiplier of 1.04 to all veneer log volume reported in Scribner Dec. C scale by veneer mills, a multiplier of 1.38 to all saw log volume reported in Doyle scale by sawmills, and a multiplier of 1.14 to all veneer log volume reported in Doyle scale by veneer mills.

The last published report from a detailed study of all industrial roundwood output in Michigan came out in 1984. Most comparisons in this report are with the 1984 study results. Quantities shown may vary slightly from one table to another because of rounding differences, but these differences are insignificant.

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HIGHLIGHTS

PRIMARY TIMBER INDUSTRY—INDUSTRIAL ROUNDWOOD

In terms of volume of wood used, pulp mills dominate Michigan forest industry, but sawmills far outnumber any other mill category. The total number of mills of all types operating in Michigan dropped to 293 in 1975 and then grew back to 373 by 1988. Although the primary wood-using industry is scattered throughout the State, major mills are concentrated in the northern two-thirds of Michigan. Michigan is divided into four Forest Survey Units (fig. 1):

W. Brad Smith, Principal Mensurationist, received a B.S. degree in Forestry and an M.S. degree in forest management from Purdue University. He joined the Forest Service in May 1977, and has been working with North Central's Forest Inventory and Analysis Unit since October, 1977.

Anthony Weatherspoon, Utilization and Marketing Unit Leader, received a B.S. degree in wood science and technology from Colorado State University. After persuing graduate studies in Wood Science at Colorado State he was employed by St. Regis Paper company in 1978. He joined the Michigan Department of Natural Resources in 1985 as the Unit Leader for Marketing and Utilization.

John Pilon, Forest Products Specialist, received a B.S. degree in forestry from Michigan Technological University. He joined the Michigan Department of Natural Resources in 1978 and has been working in the DNR Forest Development Section since 1986.

- Industrial roundwood production rose from 284.2 million cubic feet in 1984 to 355.2 million cubic feet in 1988. Annual production increases averaged 7 percent for softwoods and 9 percent for hardwoods.
- Pulpwood accounted for 59 percent of the industrial roundwood harvest compared to 61 percent in 1984.
- Industrial fuelwood production has more than doubled since 1984 and now comprises 6 percent of total roundwood production.
- Three species (aspen, hard maple, and red oak) supplied 51 percent of the growing-stock harvest.
- Log and bolt receipts at active mills (excluding fuelwood and receipts at treating plants) were 310.4 million cubic feet, up 26 percent from 1984. Hardwoods accounted for most of the increase.

PULPWOOD

- Michigan produced a record high 2.92 million cords of pulpwood (including residues) in 1988 (fig. 2). This volume was 6 percent higher than in 1986 when production was 2.81 million cords based on the North Central Station's annual study of pulpwood production.
- Aspen constituted 38 percent of the roundwood cut for pulpwood. Although aspen demand continues to be high, its share of the Michigan pulpwood market is declining in favor of birch and other hardwood species.

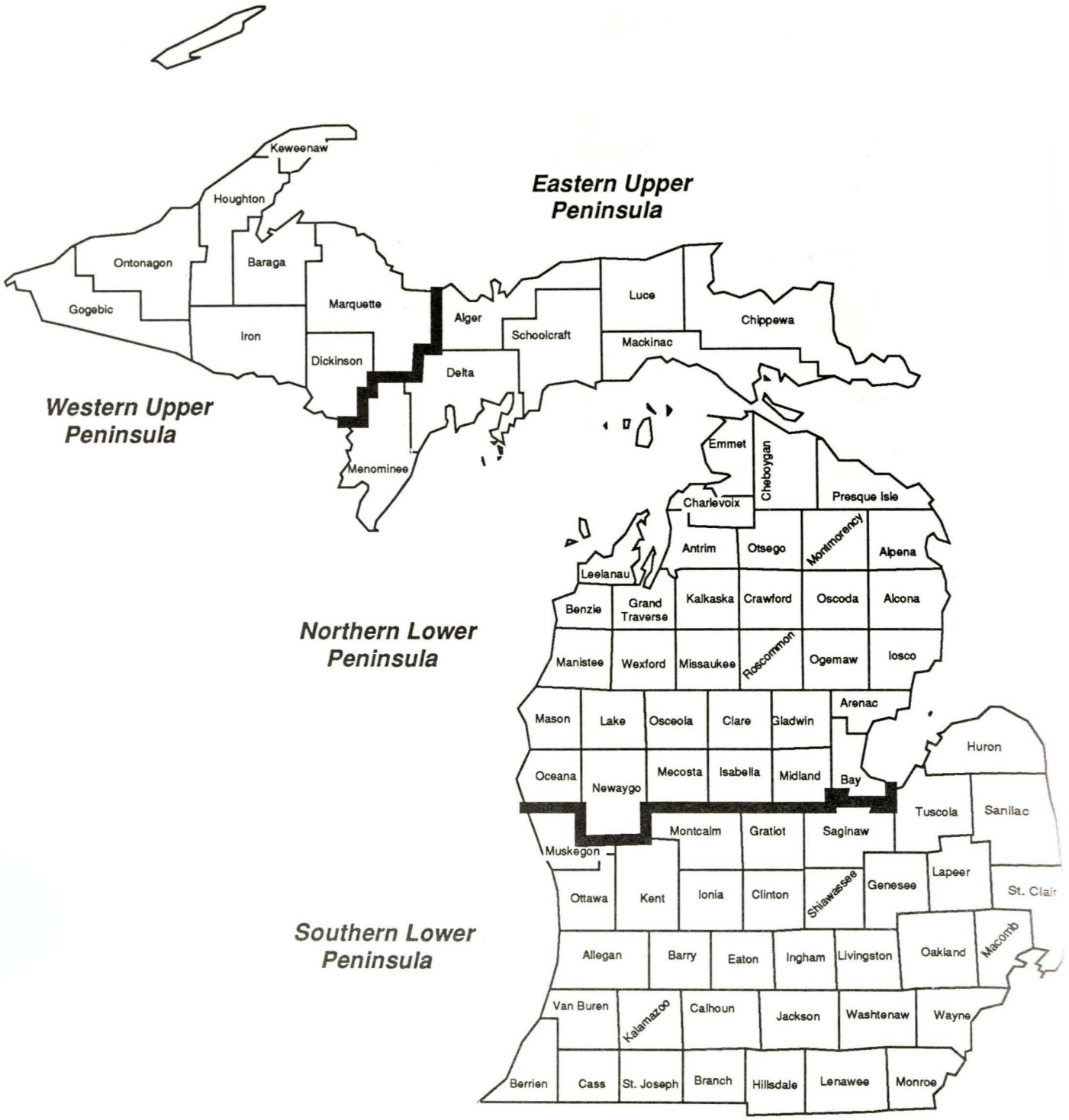

Figure 1.—*Forest Survey Units in Michigan.*

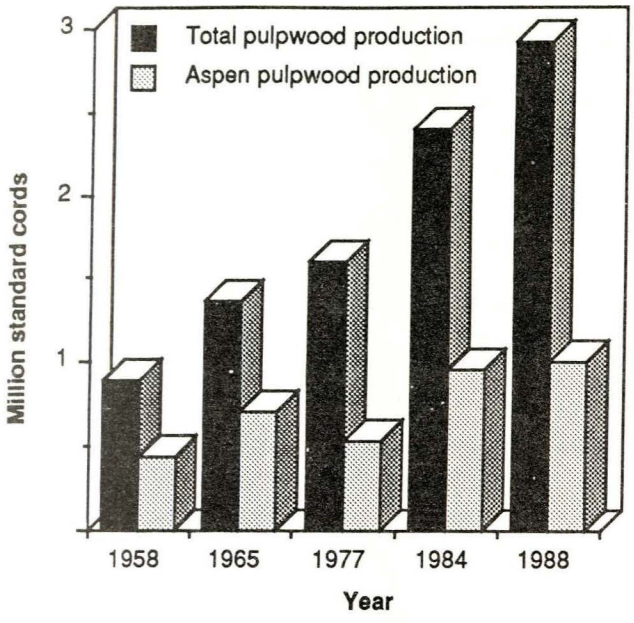

Figure 2.—*Pulpwood production for all species and aspen in Michigan for selected years.*

- Michigan pulp mills procured all but 9 percent of their wood requirements within the State. Hardwood mill residue was the principal import. Receipts were strong for aspen, jack pine, red oak, hard maple, and soft maple.

- About 4 out of 5 cords of Michigan pulpwood cut in 1988 remained in the State. Most (95 percent) of the exports went to Wisconsin. Principal exports were aspen, hard maple, jack pine, and spruce.

- Although aspen pulpwood production has more than doubled in the last 30 years, pulpwood production from other species has more than tripled.

SAW LOGS

- Michigan loggers harvested 654 million board feet of saw logs in 1988, up 124 million board feet from 1984. Seventy-nine percent was hardwoods.

- Principal saw log species were aspen, red oak, hard maple, red pine, and soft maple. Red pine saw log production has increased nearly fivefold since 1984.

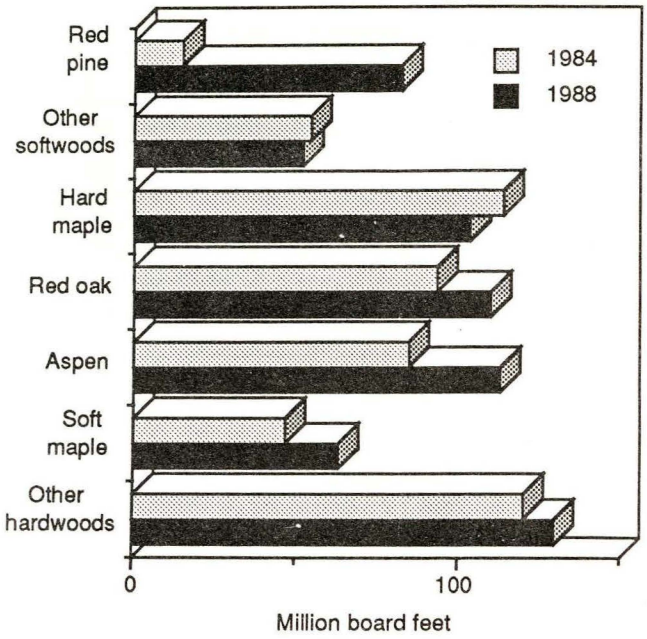

Figure 3.—*Saw log removals in Michigan by species group, 1984 and 1988.*

- Six percent of the saw log volume, primarily aspen and hard maple, was shipped to Wisconsin and Indiana.

- Major production gains since 1984 were in red pine (68 million board feet), aspen (28 million board feet), soft maple (17 million board feet), red oak (16 million board feet), and ash (13 million board feet).

- Leading saw log producing counties (with more than 20 million board feet each) were Baraga, Marquette, Iron, Newaygo, and Lake. Nineteen other counties each cut more than 10 million board feet.

- In 1988, 325 active (operating) sawmills received 629 million board feet of saw logs; in 1984, 275 sawmills received 494 million board feet of saw logs.

- Michigan imported a total of 14 million board feet of saw logs from Indiana, Wisconsin, and Ohio. Major import species were red oak, aspen, and hard maple.

VENEER LOGS

- Michigan loggers cut 36.2 million board feet of veneer logs, 14 percent more than in 1984.
- Of the 36.2 million board feet of veneer logs cut in 1988 in Michigan, 51 percent remained in the State, 35 percent was shipped to Wisconsin, 8 percent was shipped to Indiana, and the remainder was sent to Ohio, Iowa, other States, and Canada.
- Hard maple was the primary veneer species cut in Michigan followed by red oak, aspen, yellow birch, white oak, ash, paper birch, and basswood. Red oak and hard maple were the chief exports from Michigan.

OTHER PRODUCTS

- Other industrial roundwood products (7 percent of all industrial roundwood) cut in Michigan in 1988 were poles, commercial posts, industrial fuelwood, charcoal wood, cabin logs, and shingle bolts.
- Industrial fuelwood accounted for 85 percent (327 thousand cords) of these other products. Twenty-seven percent of the fuelwood was softwoods.
- Commercial posts (2.7 million) constituted another 11 percent of the other products; cedar was the leading post species. Seventy-eight percent of the posts were cut in the Eastern Upper Peninsula.

Residential fuelwood is a major nonindustrial product in Michigan. The results of a residential fuelwood study conducted in 1986 are available in a separate Station publication.

TIMBER REMOVALS

- Timber removals from growing stock on timberland for industrial roundwood was 326.4 million cubic feet in 1988.
- Total removals of all material for roundwood from timberland was 434.1 million cubic feet. Eighteen percent (79 million cubic feet) of this total was left in the woods as logging residue (fig. 4).

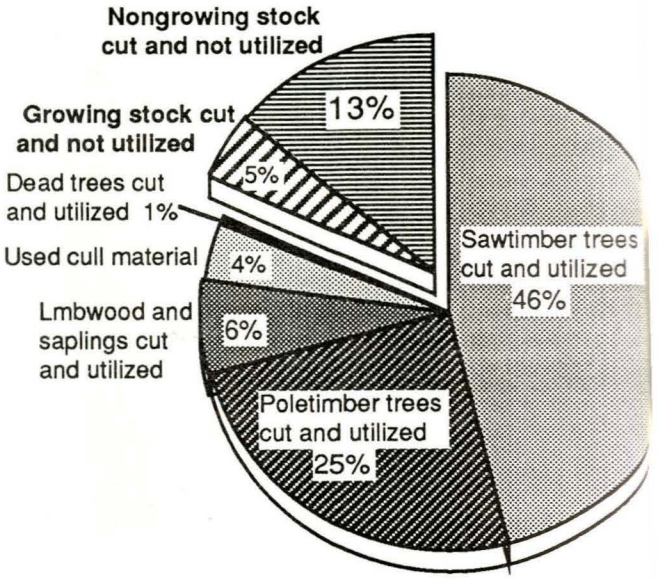

Figure 4.—*Distribution of material from harvested timberland for industrial roundwood in Michigan, 1988.*

- Major species harvested in both growing stock and sawtimber were red and jack pines, aspen, maple, and red oak.

LOGGING RESIDUE

- During 1988 loggers in Michigan generated an estimated 79.0 million cubic feet of logging residue. Logging residue includes all wood fiber left behind from trees cut during logging operations and not subsequently used.
- Aspen and hard maple account for 41 percent of all logging residues.
- Three counties—Marquette, Delta, and Menominee—each produced more than 4 million cubic feet of logging residue. All counties except Keweenaw in the Upper Peninsula had more than 1 million cubic feet of residues.

PRIMARY MILL RESIDUE

- Ninety percent or more of each residue class (coarse, fine, bark) generated at Michigan primary mills was used.

- During 1988, Michigan primary wood-using mills (except the pulp, particleboard, and waferboard mills) generated 873 thousand green tons of coarse residue, 539 thousand green tons of fine residue, and 381 thousand green tons of bark.
- Pulp mills consumed 67 percent of the coarse residue for fiber products, and industry and households consumed 25 percent for fuel.
- Fine residue and bark were used primarily for industrial fuel, soil conditioners, mulch, livestock bedding, and poultry litter.

APPENDIX

STUDY METHODS

Data for this publication came from responses to a mail questionnaire sent to all known primary wood-using mills that use logs and bolts from Michigan. For this study, all major consumers of industrial fuelwood were canvassed with the same questionnaire. The study was a cooperative effort of the Michigan Department of Natural Resources (MDNR) and the North Central Forest Experiment Station (NCFES). All canvassing in Michigan was done by the MDNR using mail and personal contacts; followup of nonrespondents was by mail, telephone, and personal contacts. MDNR utilization and marketing specialists provided estimates based on prior knowledge and contacts for a few Michigan mills that did not furnish complete data.

The NCFES mailed a questionnaire to all out-of-State mills using Michigan roundwood. Followup of nonrespondents was by mail and telephone.

Logging utilization factors were used to estimate the logging residue. These factors were determined from earlier Michigan logging studies by the NCFES.

The NCFES edited and compiled the data.

This study was authorized by Public Law 93-378 as amended by PL 94-588 and conducted using a questionnaire approved by the U.S. Office of Management and Budget (OMB). A facsimile of the study questionnaire is provided on the following three pages.

Form Approved
OMB No. 0596-0010

LOGS AND OTHER WOOD PROCESSED IN 1988

MICHIGAN

This form is for reporting the quantities and kinds of logs and other wood processed by this plant in 1988, and the disposition of the wood residues resulting from this operation.

All replies will be held confidential and used only for statistical reports.

☐ Check here if you wish to receive a copy of the report resulting from this study.

Plant or company name: _____

Mailing address: _____

Plant location: _____

Person to contact about this report: _____

Types of wood processed in 1988. *Check only one kind of product. If more htan one kind was received, fill out a separate form for each.*

14-15

01	☐	Saw logs & bolts-- includes veneer logs sawn
02	☐	Veneer logs & bolts cut into veneer
03	☐	Cooperage logs and bolts
06	☐	Piling
07	☐	Poles
09	☐	Industrial fuelwood
10	☐	Posts
11	☐	Charcoal wood
12	☐	Other (specify) _____

☐ Check here if no wood was processed in 1988 and return the form.

Total volume of above-checked product that was processed in 1988.

Conifer (pine, cedar, etc.) _____ (27-36) Hardwood (includes cottonwood) _____ (37-46)

DO NOT WRITE IN THIS BLOCK

Cols. 1-5 = **61100**

MILL	STATE	COUNTY	FACTOR
XXX	XX	XXX	XXX
6-8	9-10	11-13	47-49

50

A self-addressed envelope is provided for your convenience.

This survey is authorized by PL 93-378 as amended by PL 94-588. Your cooperation is appreciated and needed to make the results of this survey comprehensive, accurate, and timely, although you are not required to respond.

LOGS and OTHER WOOD PROCESSED IN 1988.

Do not include logs or bolts sold or transferred to other companies. Enter quantity processed opposite species in appropriate columns showing survey units, other states and Canada where the logs and bolts were harvested. The State map on page 4 shows unit boundaries. If the unit of measure is board feet, indicate the log rule or lumber tally. ☐ Doyle ☐ International ☐ Scribner ☐ Lumber tally
If cords, specify size _____. If weight, specify pounds per thousand board feet _____ or pounds per cord _____.

Cols. 1-5 = 612xx or 613xx

Species	Unit of measure: Board feet ☐ Cords ☐ Cubic feet ☐ Lineal feet ☐ Piecies ☐ Weight ☐ Other ☐ _____		XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX
Cedar	1											
Balsam fir	2											
Hemlock	3											
Jack pine	4											
Red pine	5											
White pine	6											
Spruce	7											
Tamarack	8											
Ash	9											
Aspen	10											
Balsam poplar	11											
Basswood	12											
Beech	13											
White birch	14											
Yellow birch	15											
Cottonwood	16											
Elm	17											
Hickory	18											
Hard maple	19											
Soft maple	20											
Red oak	21											
White oak	22											
Walnut	23											
Other (specify)	24											
TOTAL												

DISPOSAL OF PLANT RESIDUES IN 1988 BY TYPE AND USE, for product checked on page 1

Instructions: Please enter your best estimate of the **percentage of each type of plant residue** that was used for the various purposes indicated

Cols. 1-5 = 615xx

DISPOSAL OF RESIDUE	BARK		COARSE RESIDUES (Suitable for chipping such as slabs, edgings, etc.)		FINE RESIDUES (Sawdust, veneer, clippings, etc. not suitable for chipping)	
	1 Conifer	2 Hardwood	3 Conifer	4 Hardwood	5 Conifer	6 Hardwood
	XX	XX	XX	XX	XX	XX
1. USED FOR:						
a. Manufacture of fiber products such as pulp, hardboard, or roofing felt 1	%	%	%	%	%	%
b. Charcoal or chemical wood 2	%	%	%	%	%	%
c. Industrial fuel at this or other mill 3	%	%	%	%	%	%
d. Domestic household fuel -- sold or given away 4	%	%	%	%	%	%
e. Miscellaneous uses such as livestock bedding, mulch, small dimension, and specialty items. 5	%	%	%	%	%	%
2. NOT USED: (Including land fill and residues burned as waste. 6	%	%	%	%	%	%
3. TOTAL	%	%	%	%	%	%

DEFINITION OF TERMS

Coarse mill residue.—Wood residue suitable for chipping such as slabs, edgings, and veneer cores.

Consumption.—The quantity of a commodity, such as saw logs, utilized.

Fine mill residue.—Wood residue not suitable for chipping such as sawdust and veneer clippings.

Forest industry land.—Land owned by companies or individuals operating primary wood-using mills.

Forest Survey Unit.—A geographic area (group of counties) used by the Forest Inventory and Analysis Project to report periodic inventories and use of forest resources.

Industrial roundwood products.—Saw logs, pulpwood, veneer logs, poles, commercial posts, piling, cooperage logs, particleboard bolts, shaving bolts, lath bolts, charcoal bolts, and chips from roundwood used for pulp or board products.

Industrial roundwood production.—The quantity of industrial roundwood harvested in a geographic area.

Industrial roundwood receipts.—The quantity of industrial roundwood received by commercial mills in a geographic area regardless of the geographic source.

Logging residue.—The unused portions of trees cut or killed by logging.

National Forest land.—Federal land that has been legally designated as National Forest or purchase units, and other land under the administration of the USDA Forest Service.

Particleboard.—Panel product produced by compressing and bonding small particles of wood. Includes panels made from shavings, flakes, wafers, chips, sawdust, strands, slivers, or wood wool.

Primary wood-using mills.—Mills receiving roundwood or chips from roundwood for processing into products.

Primary wood-using mill residue.—Wood materials (coarse and fine) and bark generated at manufacturing plants from roundwood processed into principal products. These residues include wood products (byproducts) obtained incidental to production of principal products and wood materials not utilized for some product.

Roundwood.—Logs, bolts, or other round sections cut from trees (including chips from roundwood).

Standard cord.—A stack of wood bolts (or the equivalent) encompassing 128 cubic feet of wood, bark, and air space. A cord of pulpwood in the North Central Region is assumed to contain 79 cubic feet of wood and 49 cubic feet of bark and air space.

State land.—Land owned by States or land leased to these governmental units for 50 years or more.

Timberland.—Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation. Generally, this includes areas suitable for growing crops of industrial wood in excess of 20 cubic feet per acre annually.

COMMON AND SCIENTIFIC NAMES OF TREE SPECIES MENTIONED IN THIS REPORT

SOFTWOODS

Eastern white pine ..... *Pinus strobus*
Red pine ..... *Pinus resinosa*
Jack pine ..... *Pinus banksiana*
Spruce
  White spruce ..... *Picea glauca*
  Black spruce ..... *Picea mariana*
Balsam fir ..... *Abies balsamea*
Eastern hemlock ..... *Tsuga canadensis*
Tamarack ..... *Larix laricina*
Northern white-cedar ..... *Thuja occidentalis*

HARDWOODS
White oak
White oak ..... *Quercus alba*
Bur oak ..... *Quercus macrocarpa*
Chinkapin oak ..... *Quercus muehlenbergii*
Swamp white oak ..... *Quercus bicolor*
Red oak
Northern red oak ..... *Quercus rubra*
Black oak ..... *Quercus velutina*
Pin oak ..... *Quercus palustris*
Hickory
Bitternut hickory ..... *Carya cordiformis*
Pignut hickory ..... *Carya glabra*
Shagbark hickory ..... *Carya ovata*
White birch ..... *Betula papyrifera*
Yellow birch ..... *Betula alleghaniensis*
Hard maple
Black maple ..... *Acer nigrum*
Sugar maple ..... *Acer saccharum*
Soft maple
Red maple ..... *Acer rubrum*
Silver maple ..... *Acer saccharinum*
American beech ..... *Fagus grandifolia*
Ash
Black ash ..... *Fraxinus nigra*
White ash ..... *Fraxinus americana*
Balsam poplar ..... *Populus balsamifera*
Aspen
Bigtooth aspen ..... *Populus grandidentata*
Quaking aspen ..... *Populus tremuloides*
Eastern cottonwood ..... *Populus deltoides*
American basswood ..... *Tilia americana*
Black walnut ..... *Juglans nigra*
Elm
American elm ..... *Ulmus americana*
Rock elm ..... *Ulmus thomasii*
Slippery elm ..... *Ulmus rubra*
Other hardwoods
Sycamore ..... *Platinus occidentalis*
Black cherry ..... *Prunus serotina*
River birch ..... *Betula nigra*
Black locust ..... *Robinia pseudoacacia*
Honeylocust ..... *Gleditsia triacanthos*
Red mulberry ..... *Morus rubra*
Butternut ..... *Juglans cineria*
Black willow ..... *Salix nigra*
Boxelder ..... *Acer negundo*
Hackberry ..... *Celtis occidentalis*

TABLE TITLES

Table 1.—Number of active primary wood-using mills in Michigan, 1965, 1972, 1977, 1984, and 1988

Table 2.—Industrial roundwood receipts by type of mill, in Michigan, 1965, 1972, 1977, 1984, and 1988

Table 3.—Industrial roundwood production by Forest Survey Unit, species group and product, Michigan, 1988

Table 4.—Material harvested on timberland for industrial roundwood by source of material and species group, Michigan, 1988

Table 5.—Michigan pulpwood production by species group, 1946-1988

Table 6.—Michigan pulpwood production by species group and destination, 1988

Table 7.—Pulpwood production from roundwood by Forest Survey Unit, county, and species group, Michigan, 1988

Table 8.—Pulpwood receipts in Michigan by species group, 1946-1988

Table 9.—Pulpwood receipts in Michigan by area of origin, 1946-1988

Table 10.—Pulpwood receipts in Michigan by species group and area of origin, 1988

Table 11.—Saw log production and receipts in Michigan by species group, 1984 and 1988

Table 12.—Saw log production by Forest Survey Unit, species group, and State of destination, Michigan, 1988

Table 13.—Saw log production from roundwood by Forest Survey Unit, county, and species group, Michigan, 1988

Table 14.—Saw log receipts in Michigan by Forest Survey Unit, species group, and State of origin, 1988

Table 15.—Veneer log production and receipts in Michigan for selected years, 1946-1988

Table 16.—Veneer log production and receipts by species group in Michigan, 1984 and 1988

Table 17.—Veneer log and bolt production by species group and State or country of destination, 1988

Table 18.—Veneer log receipts in Michigan by area of origin for selected years, 1946-1988

Table 19.—Veneer log and bolt receipts in Michigan by species group and area of origin, 1988

Table 20.—Growing stock removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Michigan, 1988

Table 21.—Sawtimber removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Michigan, 1988

Table 22.—Logging residues from timberland generated during roundwood production by Forest Survey Unit, county, and species group, Michigan, 1988

Table 23.—Residue produced at primary wood-using mills by type of material, type of use, and county, Michigan, 1988

Table 1.--Number of active primary wood-using mills in Michigan, 1965, 1972, 1977, 1984, and 1988

Kind of mill	1965	1972	1977	1984	1988
Sawmills					
Large 1/	15	17	20	26	31
Medium 2/	107	109	86	94	117
Small 3/	266	157	178	155	177
Total	388	283	284	275	325
Pulp mills 4/	10	9	8	7	8
Veneer mills	12	9	9	8	8
Other mills	27	23	19	26	32
Total	437	324	320	316	373

1/ Annual lumber production in excess of 5 million board feet.

2/ Annual lumber production from 1 million to 5 million board feet.

3/ Annual lumber production less than 1 million board feet.

4/ Includes flakeboard plants after 1977, formerly reported in "other mills" category.

Table 2.--Industrial roundwood receipts by type of mill, in Michigan, 1965, 1972, 1977, 1984, and 1988

(In million cubic feet)

Kind of mill	1965	1972	1977	1984	1988
All species					
Pulp mills 1/	65.2	66.0	82.4	143.2	205.7
Sawmills	57.4	64.0	78.7	83.2	98.3
Other mills 2/	12.5	15.7	15.0	4.2	6.4
Total	135.1	145.7	176.1	230.6	310.4
Softwoods					
Pulp mills 1/	17.7	15.6	28.2	30.4	36.9
Sawmills	5.7	8.3	10.5	10.3	18.5
Other mills 2/	4.9	4.2	3.4	2.3	0.1
Total	28.3	28.1	42.1	43.0	55.5
Hardwoods					
Pulp mills 1/	47.5	50.4	54.2	112.8	168.8
Sawmills	51.7	55.7	68.2	72.9	79.8
Other mills 2/	7.6	11.5	11.6	1.9	6.3
Total	106.8	117.6	134.0	187.6	254.9

1/ Includes flakeboard plants after 1977, formerly reported in "other mills" category.

2/ Does not include treating plants or fuelwood receipts.

Table 3.--Industrial roundwood production by Forest Survey Unit, species group and product, Michigan, 1988

ALL UNITS

Species group	Saw logs		Veneer logs		Pulpwood		Industrial fuelwood		Poles		Posts		Other products	All products
	MBF 1/	*MCF 2/*	*MBF 1/*	*MCF 2/*	*Cords 3/*	*MCF 2/*	*Cords 3/*	*MCF 2/*	*Peices*	*MCF 2/*	*Thou. peices*	*MCF 2/*	*MCF 2/*	*MCF 2/*
SOFTWOODS														
Cedar	11,032	2,068	--	--	30,791	2,431	3,758	250	2,407	11	2,624	2,692	124	7,576
Balsam fir	596	104	99	17	118,481	9,353	32	--	182	--	--	--	--	9,474
Hemlock	2,097	345	--	--	34,873	2,755	25	--	--	--	--	--	--	3,100
Jack pine	14,212	2,674	52	9	251,085	19,821	60,712	4,085	14	--	--	--	--	26,589
Red pine	82,668	13,861	176	27	32,646	2,565	15,611	1,045	24,076	141	60	62	70	17,771
White pine	21,375	3,570	973	157	14,146	1,110	3,576	237	5,400	32	1	1	--	5,107
Spruce	2,119	393	130	21	92,814	7,334	2,850	192	10,000	55	--	--	--	7,995
Tamarack	23	5	6	1	4,955	385	--	--	--	--	4	2	--	393
Total	134,122	23,020	1,436	232	579,791	45,754	86,564	5,809	42,079	239	2,689	2,757	194	78,005
HARDWOODS														
Ash	26,861	4,702	1,059	164	25,806	2,018	460	24	--	--	--	--	--	6,908
Aspen	113,384	19,937	4,974	807	1,009,106	79,703	121,384	8,169	--	--	--	--	680	109,296
Balsam poplar	3,079	537	72	11	33,427	2,630	2,302	155	--	--	--	--	--	3,333
Basswood	22,374	3,915	1,075	170	46,652	3,673	3,201	206	--	--	--	--	--	7,964
Beech	16,542	2,764	773	123	42,828	3,380	1,834	117	--	--	--	--	--	6,384
White birch	9,338	1,626	1,088	176	185,013	14,603	12,551	837	--	--	--	--	--	17,242
Yellow birch	16,251	2,726	2,617	423	74,094	5,842	64	3	--	--	--	--	--	8,994
Cottonwood	3,002	518	286	45	1,496	116	2,375	158	--	--	--	--	--	837
Elm	1,787	297	56	7	27,253	2,149	221	14	--	--	--	--	--	2,467
Hickory	2,841	469	51	8	1,270	100	39	2	--	--	--	--	--	579
Hard maple	104,295	16,901	13,860	2,251	265,413	20,964	6,022	399	--	--	--	--	--	40,515
Soft maple	63,395	11,117	755	122	233,093	18,400	32,224	2,167	--	--	--	--	--	31,806
Red oak	109,685	19,245	6,087	984	89,463	7,057	51,587	3,474	--	--	--	--	--	30,760
White oak	19,358	3,387	1,309	208	40,028	3,152	5,698	379	--	--	--	--	--	7,126
Walnut	896	149	390	61	--	--	33	2	--	--	--	--	--	212
Other hardwoods	6,459	1,118	313	44	19,641	1,546	418	28	--	--	--	--	--	2,736
Total	519,547	89,408	34,765	5,604	2,094,583	165,333	240,413	16,134	--	--	--	--	680	277,159
All species	653,669	112,428	36,201	5,836	2,674,374	211,087	326,977	21,943	42,079	239	2,689	2,757	874	355,164

(Table 3 continued on next page)

(Table 3 continued)

ESASTERN UPPER PENINSULA UNIT

Species group	Saw logs		Veneer logs		Pulpwood		Industrial fuelwood		Poles		Posts		Other products	All products
	MBF 1/	*MCF 2/*	*MBF 1/*	*MCF 2/*	*Cords 3/*	*MCF 2/*	*Cords 3/*	*MCF 2/*	*Peices*	*MCF 2/*	*Thou. peices*	*MCF 2/*	*MCF 2/*	*MCF 2/*
SOFTWOODS														
Cedar	6,344	1,193	--	--	19,977	1,580	--	--	96	--	2,097	2,156	68	4,997
Balsam fir	93	16	--	--	74,800	5,909	--	--	8	--	--	--	--	5,925
Hemlock	887	149	--	--	20,208	1,597	--	--	--	--	--	--	--	1,746
Jack pine	1,305	245	--	--	81,049	6,401	--	--	14	--	--	--	--	6,646
Red pine	7,956	1,334	--	--	4,350	344	--	--	2,414	14	--	--	67	1,759
White pine	5,168	865	130	19	7,609	598	--	--	--	--	--	--	--	1,482
Spruce	609	116	--	--	53,157	4,202	--	--	10,000	55	--	--	--	4,373
Tamarack	--	--	--	--	2,822	220	--	--	--	--	--	--	--	220
Total	22,362	3,918	130	19	263,972	20,851	--	--	12,532	69	2,097	2,156	135	27,148
HARDWOODS														
Ash	1,350	234	--	--	4,060	318	100	6	--	--	--	--	--	558
Aspen	13,733	2,416	24	2	134,828	10,651	50	3	--	--	--	--	195	13,267
Balsam poplar	1,342	234	--	--	19,975	1,575	--	--	--	--	--	--	--	1,809
Basswood	1,464	257	31	3	16,952	1,333	10	--	--	--	--	--	--	1,593
Beech	10,704	1,801	526	84	31,796	2,512	100	6	--	--	--	--	--	4,403
White birch	3,371	594	615	100	72,112	5,696	830	56	--	--	--	--	--	6,446
Yellow birch	2,778	466	409	67	33,803	2,671	30	2	--	--	--	--	--	3,206
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Elm	94	15	--	--	11,324	896	100	6	--	--	--	--	--	917
Hickory	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hard maple	20,570	3,336	2,309	376	93,978	7,424	731	48	--	--	--	--	--	11,184
Soft maple	10,864	1,910	99	14	63,219	4,996	600	40	--	--	--	--	--	6,960
Red oak	932	163	386	63	6,363	503	--	--	--	--	--	--	--	729
White oak	5	1	--	--	--	--	--	--	--	--	--	--	--	1
Walnut	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	320	53	--	--	5,542	436	50	3	--	--	--	--	--	492
Total	67,527	11,480	4,399	709	493,952	39,011	2,601	170	--	--	--	--	195	51,565
All species	89,889	15,398	4,529	728	757,924	59,862	2,601	170	12,532	69	2,097	2,156	330	78,713

(Table 3 continued on next page)

(Table 3 continued)

WESTERN UPPER PENINSULA UNIT

Species group	Saw logs		Veneer logs		Pulpwood		Industrial fuelwood		Poles		Posts		Other products	All products
	MBF 1/	*MCF 2/*	*MBF 1/*	*MCF 2/*	*Cords 3/*	*MCF 2/*	*Cords 3/*	*MCF 2/*	*Peices*	*MCF 2/*	*Thou. peices*	*MCF 2/*	*MCF 2/*	*MCF 2/*
SOFTWOODS														
Cedar	881	164	--	--	10,481	826	--	--	--	--	142	145	56	1,191
Balsam fir	268	46	99	17	39,187	3,092	--	--	--	--	--	--	--	3,155
Hemlock	1,071	176	--	--	14,520	1,147	--	--	--	--	--	--	--	1,323
Jack pine	2,981	561	52	9	68,049	5,375	--	--	--	--	--	--	--	5,945
Red pine	6,258	1,051	176	27	7,754	608	--	--	--	--	--	--	--	1,686
White pine	10,479	1,757	842	138	6,120	480	--	--	--	--	--	--	--	2,375
Spruce	1,315	245	130	21	38,465	3,039	--	--	--	--	--	--	--	3,305
Tamarack	1	--	6	1	2,133	165	--	--	--	--	--	--	--	166
Total	23,254	4,000	1,305	213	186,709	14,732	--	--	--	--	142	145	56	19,146
HARDWOODS														
Ash	4,962	870	262	40	12,589	992	--	--	--	--	--	--	--	1,902
Aspen	20,783	3,655	4,721	768	293,393	23,177	--	--	--	--	--	--	--	27,600
Balsam poplar	1,207	212	61	10	8,445	664	--	--	--	--	--	--	--	886
Basswood	7,309	1,281	778	126	24,242	1,914	--	--	--	--	--	--	--	3,321
Beech	538	89	--	--	7,050	559	--	--	--	--	--	--	--	648
White birch	1,855	323	430	70	76,783	6,067	--	--	--	--	--	--	--	6,460
Yellow birch	13,118	2,206	2,177	353	38,984	3,076	--	--	--	--	--	--	--	5,635
Cottonwood	14	2	--	--	--	--	--	--	--	--	--	--	--	2
Elm	593	102	--	--	10,417	822	--	--	--	--	--	--	--	924
Hickory	8	1	--	--	--	--	--	--	--	--	--	--	--	1
Hard maple	56,401	9,147	10,257	1,667	148,653	11,745	--	--	--	--	--	--	--	22,559
Soft maple	11,100	1,946	371	62	74,660	5,898	--	--	--	--	--	--	--	7,906
Red oak	6,076	1,064	2,255	366	17,291	1,367	--	--	--	--	--	--	--	2,797
White oak	25	3	3	--	17	--	--	--	--	--	--	--	--	3
Walnut	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	494	85	1	--	12,473	983	--	--	--	--	--	--	--	1,068
Total	124,483	20,986	21,316	3,462	724,997	57,264	--	--	--	--	--	--	--	81,712
All species	147,737	24,986	22,621	3,675	911,706	71,996	--	--	--	--	142	145	56	100,858

(Table 3 continued on next page)

(Table 3 continued)

NORTHERN LOWER PENINSULA UNIT

Species group	Saw logs		Veneer logs		Pulpwood		Industrial fuelwood		Poles		Posts		Other products	All products
	MBF 1/	*MCF 2/*	*MBF 1/*	*MCF 2/*	*Cords 3/*	*MCF 2/*	*Cords 3/*	*MCF 2/*	*Peices*	*MCF 2/*	*Thou. peices*	*MCF 2/*	*MCF 2/*	*MCF 2/*
SOFTWOODS														
Cedar	3,768	705	--	--	333	25	3,758	250	2,311	11	385	391	--	1,382
Balsam fir	232	41	--	--	4,494	352	32	--	174	--	--	--	--	393
Hemlock	120	17	--	--	145	11	25	--	--	--	--	--	--	28
Jack pine	9,904	1,864	--	--	101,987	8,045	60,500	4,071	--	--	--	--	--	13,980
Red pine	65,909	11,052	--	--	20,493	1,610	15,611	1,045	13,463	79	60	62	3	13,851
White pine	5,285	878	1	--	417	32	3,576	237	5,400	32	1	1	--	1,180
Spruce	192	31	--	--	1,192	93	2,850	192	--	--	--	--	--	316
Tamarack	6	1	--	--	--	--	--	--	--	--	4	2	--	3
Total	85,416	14,589	1	0	129,061	10,168	86,352	5,795	21,348	122	450	456	3	31,133
HARDWOODS														
Ash	10,618	1,863	679	110	7,374	573	214	9	--	--	--	--	--	2,555
Aspen	75,785	13,330	229	37	562,414	44,425	121,220	8,160	--	--	--	--	485	66,437
Balsam poplar	115	19	11	1	5,007	391	2,286	155	--	--	--	--	--	566
Basswood	10,657	1,870	264	41	5,458	426	3,125	202	--	--	--	--	--	2,539
Beech	4,022	671	231	37	3,713	289	1,694	109	--	--	--	--	--	1,106
White birch	3,867	669	43	6	36,025	2,833	11,721	781	--	--	--	--	--	4,289
Yellow birch	310	48	31	3	1,284	94	9	--	--	--	--	--	--	145
Cottonwood	658	114	23	3	760	59	2,302	154	--	--	--	--	--	330
Elm	129	17	27	3	649	51	--	--	--	--	--	--	--	71
Hickory	149	23	11	2	53	5	--	--	--	--	--	--	--	30
Hard maple	22,077	3,579	498	79	21,996	1,736	5,155	343	--	--	--	--	--	5,737
Soft maple	26,141	4,585	271	44	84,877	6,694	31,318	2,107	--	--	--	--	--	13,430
Red oak	72,201	12,669	1,627	263	54,577	4,303	51,443	3,465	--	--	--	--	--	20,700
White oak	7,739	1,352	520	84	31,129	2,451	5,640	375	--	--	--	--	--	4,262
Walnut	7	1	--	--	--	--	--	--	--	--	--	--	--	1
Other hardwoods	1,895	330	222	33	1,626	127	8	--	--	--	--	--	--	490
Total	236,370	41,140	4,687	746	816,942	64,457	236,135	15,860	--	--	--	--	485	122,688
All species	321,786	55,729	4,688	746	946,003	74,625	322,487	21,655	21,348	122	450	456	488	153,821

(Table 3 continued on next page)

(Table 3 continued)

SOUTHERN LOWER PENINSULA UNIT

Species group	Saw logs		Veneer logs		Pulpwood		Industrial fuelwood		Poles		Posts		Other products	All products
	MBF 1/	*MCF 2/*	*MBF 1/*	*MCF 2/*	*Cords 3/*	*MCF 2/*	*Cords 3/*	*MCF 2/*	*Peices*	*MCF 2/*	*Thou. peices*	*MCF 2/*	*MCF 2/*	*MCF 2/*
SOFTWOODS														
Cedar	39	6	--	--	--	--	--	--	--	--	--	--	--	6
Balsam fir	3	1	--	--	--	--	--	--	--	--	--	--	--	1
Hemlock	19	3	--	--	--	--	--	--	--	--	--	--	--	3
Jack pine	22	4	--	--	--	--	212	14	--	--	--	--	--	18
Red pine	2,545	424	--	--	49	3	--	--	8,199	48	--	--	--	475
White pine	443	70	--	--	--	--	--	--	--	--	--	--	--	70
Spruce	3	1	--	--	--	--	--	--	--	--	--	--	--	1
Tamarack	16	4	--	--	--	--	--	--	--	--	--	--	--	4
Total	3,090	513	0	0	49	3	212	14	8,199	48	--	--	--	578
HARDWOODS														
Ash	9,931	1,735	118	14	1,783	135	146	9	--	--	--	--	--	1,893
Aspen	3,083	536	--	--	18,471	1,450	114	6	--	--	--	--	--	1,992
Balsam poplar	415	72	--	--	--	--	16	--	--	--	--	--	--	72
Basswood	2,944	507	2	--	--	--	66	4	--	--	--	--	--	511
Beech	1,278	203	16	2	269	20	40	2	--	--	--	--	--	227
White birch	245	40	--	--	93	7	--	--	--	--	--	--	--	47
Yellow birch	45	6	--	--	23	1	25	1	--	--	--	--	--	8
Cottonwood	2,330	402	263	42	736	57	73	4	--	--	--	--	--	505
Elm	971	163	29	4	4,863	380	121	8	--	--	--	--	--	555
Hickory	2,684	445	40	6	1,217	95	39	2	--	--	--	--	--	548
Hard maple	5,247	839	796	129	786	59	136	8	--	--	--	--	--	1,035
Soft maple	15,290	2,676	14	2	10,337	812	306	20	--	--	--	--	--	3,510
Red oak	30,476	5,349	1,819	292	11,232	884	144	9	--	--	--	--	--	6,534
White oak	11,589	2,031	786	124	8,882	701	58	4	--	--	--	--	--	2,860
Walnut	889	148	390	61	--	--	33	2	--	--	--	--	--	211
Other hardwoods	3,750	650	90	11	--	--	360	25	--	--	--	--	--	686
Total	91,167	15,802	4,363	687	58,692	4,601	1,677	104	--	--	--	--	--	21,194
All species	94,257	16,315	4,363	687	58,741	4,604	1,889	118	--	--	--	--	--	21,772

1/ Thousand board feet, International 1/4-inch rule.

2/ Thousand cubic feet.

3/ Standard cords are 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

Table 4.-- Material harvested on timberland for industrial roundwood by source of material and species group, Michigan, 1988

(In thousand cubic feet)

Species group	Growing stock				Nongrowing stock						Total material used for products	Total material not used	Total material harvested
	Used for products				Used for products								
	Saw-timber	Pole-timber	Residue	TOTAL	Limb-wood	Sap-lings	Cull trees	Dead trees	Not used	TOTAL			
SOFTWOODS													
Cedar	4,403	2,596	675	7,674	302	167	56	52	1,340	1,917	7,576	2,015	9,591
Balsam fir	6,639	2,357	395	9,391	309	103	24	42	2,292	2,770	9,474	2,687	12,161
Hemlock	1,755	897	102	2,754	160	67	144	77	921	1,369	3,100	1,023	4,123
Jack pine	14,430	7,028	684	22,142	3,678	269	365	819	4,457	9,588	26,589	5,141	31,730
Red pine	15,055	1,463	684	17,202	806	63	194	190	4,775	6,028	17,771	5,459	23,230
White pine	4,235	485	209	4,929	221	24	86	56	1,335	1,722	5,107	1,544	6,651
Spruce	5,559	1,983	352	7,894	295	83	38	37	1,947	2,400	7,995	2,299	10,294
Tamarack	278	102	16	396	9	4	0	0	97	110	393	113	506
Total	52,354	16,911	3,117	72,382	5,780	780	907	1,273	17,164	25,904	78,005	20,281	98,286
HARDWOODS													
Ash	5,178	1,283	821	7,282	255	26	140	22	891	1,334	6,904	1,712	8,616
Aspen	50,243	47,680	4,400	102,323	7,312	270	3,100	691	14,201	25,574	109,296	18,601	127,897
Balsam poplar	1,422	1,393	232	3,047	275	12	195	36	439	957	3,333	671	4,004
Basswood	5,040	2,125	812	7,977	441	32	271	50	1,009	1,803	7,959	1,821	9,780
Beech	4,107	860	514	5,481	446	11	957	2	1,582	2,998	6,383	2,096	8,479
White birch	6,605	7,729	1,088	15,422	1,541	94	1,057	216	2,178	5,086	17,242	3,266	20,508
Yellow birch	5,334	1,305	704	7,343	649	13	1,689	4	2,501	4,856	8,994	3,205	12,199
Cottonwood	588	143	84	815	84	5	14	1	64	168	835	148	983
Elm	929	1,157	143	2,229	199	28	123	30	269	649	2,466	412	2,878
Hickory	475	70	56	601	22	4	7	0	83	116	578	139	717
Hard maple	26,170	5,761	3,709	35,640	2,762	131	5,649	41	10,040	18,623	40,514	13,749	54,263
Soft maple	16,240	11,073	2,478	29,791	2,716	295	1,210	268	3,500	7,989	31,802	5,978	37,780
Red oak	20,063	6,340	2,107	28,510	2,773	172	915	487	3,100	7,447	30,750	5,207	35,957
White oak	3,811	2,275	391	6,477	622	89	199	121	626	1,657	7,117	1,017	8,134
Walnut	200	3	24	227	3	0	6	0	39	48	212	63	275
Other hardwoods	1,637	817	260	2,714	141	3	115	22	392	673	2,735	652	3,387
Total	148,042	90,014	17,823	255,879	20,241	1,185	15,647	1,991	40,914	79,978	277,120	58,737	335,857
All species	200,396	106,925	20,940	328,261	26,021	1,965	16,554	3,264	58,078	105,882	355,125	79,018	434,143

Table 5.--Michigan pulpwood production by species group, 1946-1988

(In thousand standard cords, unpeeled) 1/

Year	Roundwood									Residue	
	Total	Pine	Balsam fir	Hemlock	Spruce	Cedar & tamarack	Aspen	Birch	Other hardwoods	Soft-woods	Hard-woods
1946	845	85	117	250	127	3	246	9	8	--	--
1947	679	86	139	149	134	2	153	6	10	--	--
1948	728	89	163	132	133	2	182	7	19	--	1
1949	519	38	124	62	97	2/	168	5	25	--	--
1950	657	66	123	84	99	2/	251	6	28	--	--
1951	935	103	140	169	110	2/	371	8	34	--	--
1952	762	58	153	125	120	2/	275	8	23	--	--
1953	724	67	102	71	81	2/	365	5	33	--	--
1954	797	43	137	62	119	1	404	5	26	--	--
1955	808	38	122	36	111	2/	459	4	38	--	--
1956	966	67	119	88	115	2/	537	4	36	--	--
1957	980	70	147	61	118	2/	521	7	56	--	--
1958	900	149	115	35	86	1	434	1	79	--	--
1959	1,053	197	109	39	83	3	523	4	90	1	4
1960	1,237	188	135	46	108	5	669	9	75	--	2
1961	1,106	156	115	44	96	4	558	16	96	2	19
1962	1,223	184	104	57	86	4	601	21	144	2	20
1963	1,297	174	121	62	88	3	662	23	131	4	29
1964	1,322	198	85	59	72	3	674	38	146	5	42
1965	1,365	224	74	64	65	2	704	32	149	5	46
1966	1,571	251	88	99	74	1	777	12	194	4	71
1967	1,344	193	90	60	75	1	646	11	200	3	65
1968	1,168	205	62	45	39	2	540	13	172	6	84
1969	1,302	207	44	63	39	2	606	23	196	8	114
1970	1,406	239	67	69	51	3	596	33	196	10	142
1971	1,267	235	53	43	45	2	548	23	196	13	109
1972	1,401	229	60	50	38	7	529	36	309	21	122
1973	1,585	204	68	58	46	5	603	59	365	28	149
1974	1,843	259	74	52	40	7	706	85	424	17	179
1975	1,280	235	74	50	45	5	436	36	217	22	160
1976	1,541	281	75	79	32	6	491	69	320	24	164
1977	1,595	262	94	62	48	10	532	62	333	21	171
1978	1,675	277	87	48	42	8	586	90	390	17	130
1979 3/	1,981	350	85	45	39	10	709	109	456	15	163
1980 3/	1,969	268	109	58	58	13	705	104	501	15	138
1981 3/	1,838	237	104	39	45	17	652	105	473	15	151
1982 3/	1,751	262	105	56	68	22	632	89	396	13	108
1983 3/	2,157	256	101	48	78	31	889	130	451	21	152
1984 3/	2,398	293	78	47	77	24	962	120	607	23	167
1985 3/	2,376	314	93	37	84	53	977	110	545	17	146
1986 3/	2,807	315	96	43	93	56	979	221	812	53	139
1987 3/	2,746	292	98	39	97	68	896	228	799	72	157
1988 3/	2,919	298	118	35	93	36	1,009	259	826	69	176

1/ 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Less than 500 cords.

3/ Includes logs, bolts, and wood residue used in manufacturing particleboard and waferboard.

Table 6.-- Michigan pulpwood production by species group and destination, 1988

(In thousand standard cords, unpeeled) 1/

Class of material and species group	Total	Michigan	Minnesota	Wisconsin	Canada
ROUNDWOOD					
SOFTWOODS					
Cedar	31	31	--	--	--
Balsam fir	118	106	--	8	5
Hemlock	35	33	--	2	--
Jack pine	251	193	--	58	--
Red pine	33	26	--	7	--
White pine	14	12	--	2	--
Spruce	93	61	*2/*	25	7
Tamarack	5	4	--	1	--
Total	580	465	*2/*	103	12
HARDWOODS					
Ash	26	23	--	3	--
Aspen	1,009	899	--	110	--
Balsam poplar	33	33	--	--	--
Basswood	47	46	--	1	--
Beech	43	40	--	3	--
White birch	185	182	--	3	--
Yellow birch	74	67	--	7	--
Cottonwood	1	1	--	--	--
Elm	27	27	--	--	--
Hickory	1	1	--	--	--
Hard maple	265	234	--	32	--
Soft maple	233	221	--	12	--
Red oak	89	88	--	2	--
White oak	40	40	--	--	--
Other hardwoods	20	15	--	4	--
Total	2,094	1,917	--	177	--
Total roundwood	2,674	2,382	*2/*	280	12
RESIDUES 3/					
Softwood	69	61	--	8	--
Hardwood	176	154	--	22	--
Total	245	215	--	30	--
ALL MATERIAL	2,919	2,597	*2/*	310	12

1/ 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Less than 500 cords.

3/ Chippable mill residues such as slabs, edgings, etc. Roundwood chips are included in roundwood.

Table 7.-- Pulpwood production from roundwood by Forest Survey Unit, county, and species group, Michigan, 1988

(In standard cords)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tama-rack	Ash	Aspen	Balsam poplar	Bass-wood	Beech	White birch
EASTERN UPPER PENINSULA														
Alger	1,764	6,188	5,339	6,947	131	666	3,753	239	730	5,629	2,192	2,491	6,166	4,404
Chippewa	1,887	6,618	1,902	7,277	140	712	4,599	256	129	12,263	1,418	728	2,406	6,820
Delta	6,213	21,960	4,564	28,582	1,118	2,345	19,019	842	1,326	38,558	6,876	5,988	5,439	20,098
Luce	1,683	5,839	1,103	14,372	554	635	4,245	228	123	4,347	647	416	3,706	2,097
Mackinac	1,498	8,979	1,052	2,389	134	565	5,713	203	218	13,478	1,880	1,244	1,461	4,501
Menominee	3,411	13,944	3,151	6,947	636	1,303	8,529	603	1,034	50,559	4,068	3,676	3,386	25,551
Schoolcraft	3,521	11,272	3,097	14,535	1,637	1,383	7,299	451	500	9,994	2,894	2,409	9,232	8,641
Total	19,977	74,800	20,208	81,049	4,350	7,609	53,157	2,822	4,060	134,828	19,975	16,952	31,796	72,112
WESTERN UPPER PENINSULA														
Baraga	478	1,491	1,400	9,987	48	189	939	61	1,554	11,275	5	2,139	1,313	6,276
Dickinson	4,070	14,723	3,901	7,830	2,512	1,551	11,467	639	592	44,227	1,938	2,369	75	14,427
Gogebic	26	460	419	2,059	1,223	528	3,101	17	1,592	17,696	80	4,160	337	4,086
Houghton	1,022	3,630	1,367	6,098	562	696	2,599	205	1,058	9,175	134	1,588	623	4,879
Iron	854	4,524	1,090	4,889	2,342	975	9,489	534	1,462	52,083	328	1,800	711	13,419
Keweenaw	--	16	--	166	78	103	9	--	101	554	--	--	145	13
Marquette	4,031	13,950	6,125	29,523	494	1,561	10,634	666	1,637	72,830	4,335	6,090	3,640	28,443
Ontonagon	--	393	218	7,497	495	517	227	11	4,593	85,553	1,625	6,096	206	5,240
Total	10,481	39,187	14,520	68,049	7,754	6,120	38,465	2,133	12,589	293,393	8,445	24,242	7,050	76,783
NORTHERN LOWER PENINSULA														
Alcona	--	36	--	9,490	43	--	--	--	734	37,457	1,446	106	115	4,241
Alpena	--	77	--	648	97	--	47	--	364	19,404	698	63	53	2,547
Antrim	--	--	--	--	434	--	--	--	--	5,023	--	26	26	--
Arenac	--	--	--	17	9	--	--	--	4	3,599	73	--	--	16
Bay	--	--	--	--	--	--	--	--	--	32	--	--	--	--
Benzie	--	--	--	112	40	--	--	--	166	7,502	104	258	262	339
Charlevoix	--	--	--	203	70	31	--	--	100	1,095	--	1,493	65	146
Cheboygan	146	1,428	17	3,505	953	24	264	--	347	25,430	342	34	21	3,512
Clare	--	--	--	236	37	--	--	--	264	26,868	--	--	120	569
Crawford	--	23	--	23,091	1,079	--	6	--	4	19,915	--	8	25	712
Emmet	63	456	128	2,692	1,159	362	223	--	154	12,468	214	--	--	597
Gladwin	--	--	--	39	10	--	--	--	46	8,168	--	--	--	287
Grand Traverse	--	--	--	4,959	2,303	--	--	--	95	15,641	--	213	214	314
Iosco	--	--	--	354	53	--	--	--	282	7,255	127	25	28	1,244
Isabella	--	--	--	--	29	--	--	--	122	13,115	--	--	10	82
Kalkaska	--	--	--	6,166	1,694	--	--	--	40	11,028	--	389	86	395
Lake	--	--	--	4,245	406	--	--	--	489	28,388	--	208	305	713
Leelanau	--	--	--	--	--	--	--	--	--	36	--	104	--	--
Manistee	--	--	--	37	193	--	--	--	211	26,095	260	521	562	1,913
Mason	--	--	--	--	150	--	--	--	183	15,525	--	104	113	697
Mecosta	--	--	--	40	338	--	--	--	77	27,781	--	--	2	216
Midland	--	--	--	--	--	--	--	--	161	12,749	78	104	30	307
Missaukee	--	--	--	2,173	2,934	--	--	--	305	23,395	--	208	41	579
Montmorency	--	--	--	2,461	95	--	--	--	394	25,763	338	1,110	417	3,908
Newaygo	--	--	--	209	87	--	--	--	353	22,588	--	--	91	209
Oceana	--	--	--	--	24	--	--	--	420	21,533	--	--	124	189

(Table 7 continued on next page)

(Table 7 continued)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar	Basswood	Beech	White birch
NORTHERN LOWER PENINSULA (continued)														
Ogemaw	--	20	--	1,375	11	--	--	--	66	7,936	102	33	9	1,725
Osceola	--	--	--	135	511	--	--	--	275	29,309	--	--	140	731
Oscoda	--	682	--	11,255	717	--	5	--	300	22,168	332	36	27	2,149
Otsego	--	--	--	8,943	955	--	--	--	253	11,015	--	--	236	54
Presque Isle	124	1,772	--	6,547	115	--	647	--	674	28,336	818	103	101	5,790
Roscommon	--	--	--	12,469	253	--	--	--	25	24,085	75	--	2	701
Wexford	--	--	--	586	5,694	--	--	--	466	21,712	--	312	488	1,143
Total	333	4,494	145	101,987	20,493	417	1,192	--	7,374	562,414	5,007	5,458	3,713	36,025
SOUTHERN LOWER PENINSULA														
Allegan	--	--	--	--	--	--	--	--	187	867	--	--	--	--
Barry	--	--	--	--	--	--	--	--	10	73	--	--	2	--
Berrien	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Branch	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calhoun	--	--	--	--	--	--	--	--	247	754	--	--	1	--
Cass	--	--	--	--	--	--	--	--	16	2	--	--	--	--
Clinton	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Eaton	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Genessee	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gratiot	--	--	--	--	--	--	--	--	54	1,571	--	--	--	--
Hillsdale	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Huron	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ingham	--	--	--	--	--	--	--	--	--	20	--	--	--	--
Ionia	--	--	--	--	--	--	--	--	6	97	--	--	--	--
Jackson	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kalamazoo	--	--	--	--	--	--	--	--	58	112	--	--	--	--
Kent	--	--	--	--	--	--	--	--	145	821	--	--	17	--
.apeer	--	--	--	--	--	--	--	--	--	--	--	--	--	--
.enawee	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Livingston	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Macomb	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Monroe	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Montcalm	--	--	--	--	--	--	--	--	435	7,209	--	--	53	75
Muskegon	--	--	--	--	49	--	--	--	246	6,335	--	--	166	18
Oakland	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ottawa	--	--	--	--	--	--	--	--	98	275	--	--	30	--
Saginaw	--	--	--	--	--	--	--	--	--	--	--	--	--	--
St. Clair	--	--	--	--	--	--	--	--	--	--	--	--	--	--
St. Joseph	--	--	--	--	--	--	--	--	109	209	--	--	--	--
Sanilac	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Shiawassee	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tuscola	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Van Buren	--	--	--	--	--	--	--	--	172	126	--	--	--	--
Washtenaw	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	--	--	--	49	--	--	--	1,783	18,471	--	--	269	93
State total	30,791	118,481	34,873	251,085	32,646	14,146	92,814	4,955	25,806	1,009,106	33,427	46,652	42,828	185,013

(Table 7 continued on next page)

(Table 7 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	O. hard-woods	All species
EASTERN UPPER PENINSULA										
Alger	5,777	--	1,446	--	19,250	9,316	1,385	--	1,153	84,966
Chippewa	1,585	--	547	--	4,343	4,305	133	--	148	58,216
Delta	9,297	--	3,950	--	20,897	16,367	2,217	--	1,744	217,400
Luce	1,791	--	320	--	6,787	2,284	100	--	183	51,460
Mackinac	1,815	--	944	--	2,883	3,022	213	--	248	52,440
Menominee	6,017	--	2,500	--	15,067	10,856	1,493	--	1,396	164,127
Schoolcraft	7,521	--	1,617	--	24,751	17,069	822	--	670	129,315
Total	33,803	--	11,324	--	93,978	63,219	6,363	--	5,542	757,924
WESTERN UPPER PENINSULA										
Baraga	5,792	--	797	--	23,751	10,793	2,465	--	2,671	83,424
Dickinson	3,798	--	1,353	--	10,376	6,945	1,258	--	864	134,915
Gogebic	7,083	--	1,314	--	27,660	13,999	3,775	8	2,275	91,898
Houghton	3,519	--	677	--	14,485	6,864	1,498	--	1,428	62,107
Iron	4,317	--	728	--	17,075	8,299	1,701	2	1,702	128,324
Keweenaw	266	--	1	--	1,230	437	73	1	193	3,386
Marquette	10,146	--	3,265	--	29,555	18,916	3,716	--	2,511	252,068
Ontonagon	4,063	--	2,282	--	24,521	8,407	2,805	6	829	155,584
Total	38,984	--	10,417	--	148,653	74,660	17,291	17	12,473	911,706
NORTHERN LOWER PENINSULA										
Alcona	1	--	--	--	286	3,496	4,647	338	--	62,436
Alpena	--	--	--	--	92	1,868	975	108	--	27,041
Antrim	--	--	--	--	1,556	2,229	--	--	--	9,294
Arenac	--	--	--	--	--	413	20	2	--	4,153
Bay	--	--	--	--	--	--	--	--	--	32
Benzie	224	--	--	--	954	1,724	631	417	208	12,941
Charlevoix	45	--	--	--	991	245	23	--	--	4,507
Cheboygan	--	--	--	--	95	6,247	1,090	--	--	43,455
Clare	--	--	--	--	101	2,212	2,318	1,097	--	33,822
Crawford	--	--	--	--	2,892	2,226	4,600	310	--	54,891
Emmet	--	--	--	--	327	4,386	--	--	--	23,229
Gladwin	1	--	--	--	--	457	292	232	--	9,532
Grand Traverse	57	--	--	--	555	830	679	666	208	26,734
Iosco	2	--	--	--	86	1,173	278	113	--	11,020
Isabella	--	--	--	--	15	330	247	129	--	14,079
Kalkaska	48	--	--	--	962	1,975	556	336	182	23,857
Lake	225	--	216	--	964	6,044	8,212	6,459	104	56,978
Leelanau	--	--	--	--	313	313	--	--	--	766
Manistee	210	--	--	--	3,110	5,546	3,594	3,306	208	45,766
Mason	10	--	216	--	444	3,000	1,514	1,813	104	23,873
Mecosta	7	--	--	--	62	218	69	45	--	28,855
Midland	4	25	--	--	2	749	237	266	--	14,712
Missaukee	3	--	--	--	554	4,327	1,430	1,122	--	37,071
Montmorency	--	--	--	--	1,807	4,175	2,169	34	--	42,671
Newaygo	40	--	217	53	554	6,505	6,378	6,826	41	44,151
Oceana	73	735	--	--	459	3,208	3,004	3,056	--	32,825

(Table 7 continued on next page)

(Table 7 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	O. hard-woods	All species
NORTHERN LOWER PENINSULA (continued)										
Ogemaw	1	--	--	--	27	523	107	9	--	11,944
Osceola	68	--	--	--	708	2,081	528	1,177	50	35,713
Oscoda	--	--	--	--	297	4,494	6,302	339	--	49,103
Otsego	2	--	--	--	1,855	3,944	464	1	--	27,722
Presque Isle	--	--	--	--	235	4,749	1,370	152	--	51,533
Roscommon	2	--	--	--	4	901	660	260	--	39,437
Wexford	261	--	--	--	1,689	4,289	2,183	2,516	521	41,860
Total	1,284	760	649	53	21,996	84,877	54,577	31,129	1,626	946,003
SOUTHERN LOWER PENINSULA										
Allegan	--	184	433	157	62	1,617	2,301	2,033	--	7,841
Barry	--	--	432	9	25	34	66	21	--	672
Berrien	--	--	--	--	--	--	--	--	--	--
Branch	--	--	--	--	--	--	--	--	--	--
Calhoun	--	--	649	313	32	2,627	653	1,127	--	6,403
Cass	--	--	344	6	4	37	11	8	--	428
Clinton	--	--	--	--	--	--	--	--	--	--
Eaton	--	--	--	--	--	--	--	--	--	--
Genessee	--	--	--	--	--	--	--	--	--	--
Gratiot	--	--	--	--	17	114	107	66	--	1,929
Hillsdale	--	--	--	--	--	--	--	--	--	--
Huron	--	--	--	--	--	--	--	--	--	--
Ingham	--	--	--	--	--	--	--	--	--	20
Ionia	--	--	90	--	3	9	13	3	--	221
Jackson	--	--	--	--	--	--	--	--	--	--
Kalamazoo	--	--	216	104	--	190	160	25	--	865
Kent	5	--	321	1	182	492	696	292	--	2,972
Lapeer	--	--	--	--	--	--	--	--	--	--
Lenawee	--	--	--	--	--	--	--	--	--	--
Livingston	--	--	--	--	--	--	--	--	--	--
Macomb	--	--	--	--	--	--	--	--	--	--
Monroe	--	--	--	--	--	--	--	--	--	--
Montcalm	--	--	1,081	52	71	937	1,091	1,735	--	12,739
Muskegon	14	--	216	--	66	2,283	4,667	2,739	--	16,799
Oakland	--	--	--	--	--	--	--	--	--	--
Ottawa	4	368	216	--	138	1,112	679	341	--	3,261
Saginaw	--	--	--	--	--	--	--	--	--	--
St. Clair	--	--	--	--	--	--	--	--	--	--
St. Joseph	--	--	216	366	31	249	336	68	--	1,584
Sanilac	--	--	--	--	--	--	--	--	--	--
Shiawassee	--	--	--	--	--	--	--	--	--	--
Tuscola	--	--	--	--	--	--	--	--	--	--
Van Buren	--	184	649	209	155	636	452	424	--	3,007
Washtenaw	--	--	--	--	--	--	--	--	--	--
Wayne	--	--	--	--	--	--	--	--	--	--
Total	23	736	4,863	1,217	786	10,337	11,232	8,882	--	58,741
State total	74,094	1,496	27,253	1,270	265,413	233,093	89,463	40,028	19,641	2,674,374

Table 8.--Pulpwood receipts in Michigan by species group, 1946-1988

(In thousand standard cords, unpeeled) 1/

	Roundwood									Residue	
Year	Total	Pine	Balsam fir	Hemlock	Spruce	Cedar & tamarack	Aspen	Birch	Other hardwoods	Soft-woods	Hard-woods
1946	416	85	38	81	133	2	69	2/	8	--	--
1947	444	141	60	64	118	1	50	1	9	--	--
1948	485	132	76	46	132	1	78	--	19	--	1
1949	258	53	45	7	88	--	40	2/	25	--	--
1950	383	66	60	40	101	--	87	1	28	--	--
1951	582	134	81	100	108	--	126	2/	33	--	--
1952	449	80	68	60	116	--	102	1	22	--	--
1953	451	75	54	45	102	--	142	--	33	--	--
1954	412	37	53	2/	97	--	198	--	27	--	--
1955	455	20	53	2	102	--	240	--	38	--	--
1956	535	31	61	2/	92	--	323	--	28	--	--
1957	533	48	83	2	90	--	264	1	45	--	--
1958	549	107	70	2/	73	--	234	--	65	--	--
1959	699	116	70	1	94	--	336	--	81	--	1
1960	810	128	85	2	94	--	431	5	65	--	--
1961	700	109	68	2/	75	--	351	6	91	--	--
1962	679	97	35	--	29	--	387	14	117	--	--
1963	742	84	49	--	78	--	399	9	123	--	--
1964	791	107	40	2/	68	2/	429	18	127	--	2
1965	825	114	35	4	71	--	436	29	118	--	18
1966	1,004	143	44	5	78	--	526	8	159	--	41
1967	774	117	46	2	81	--	323	6	161	--	38
1968	774	133	35	3	61	--	328	11	147	--	56
1969	771	116	19	2	16	--	358	22	152	--	86
1970	805	152	26	3	22	--	332	28	154	11	77
1971	700	115	19	2	17	2/	298	22	165	1	61
1972	931	127	27	22	14	7	322	35	282	9	86
1973	1,199	135	37	36	14	4	404	64	351	12	142
1974	1,324	156	33	29	12	6	482	77	369	9	151
1975	844	167	18	23	7	4	288	33	171	8	125
1976	1,115	213	21	56	11	5	327	53	258	17	154
1977	1,233	208	51	62	25	10	370	48	269	17	173
1978	1,332	218	54	51	20	8	423	71	311	21	155
1979 3/	1,490	222	47	46	13	10	527	85	343	13	184
1980 3/	1,493	202	51	52	28	12	525	73	393	11	146
1981 3/	1,448	188	67	37	22	15	486	85	383	14	151
1982 3/	1,387	216	69	52	44	19	493	73	305	11	105
1983 3/	1,787	204	63	46	51	27	746	114	371	17	148
1984 3/	2,000	234	46	46	37	22	833	103	494	14	171
1985 3/	2,264	264	64	34	57	52	819	103	686	20	165
1986 3/	2,630	268	80	40	71	55	811	272	822	54	157
1987 3/	2,610	239	89	35	68	67	783	276	809	73	171
1988 3/	2,925	231	108	33	61	35	947	323	936	63	188

1/ 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Less than 500 cords.

3/ Includes logs, bolts, and wood residue used in manufacturing particleboard and waferboard.

Table 9.--Pulpwood receipts in Michigan by area of origin, 1946-1988

(In thousand standard cords, unpeeled) 1/

Year	All areas	Area of Origin				
		Michigan	Wisconsin	Minnesota	Other states	Canada
1946	416	259	--	12	--	145
1947	444	239	42	21	--	142
1948	485	271	--	22	1	191
1949	258	130	--	3	2/	125
1950	383	258	--	3	--	122
1951	582	398	4	9	1	170
1952	449	290	5	1	2	151
1953	451	319	11	11	2/	110
1954	412	309	2/	4	2/	99
1955	455	356	--	5	--	94
1956	535	437	--	7	--	91
1957	533	427	--	9	--	97
1958	549	458	--	7	--	84
1959	699	603	3	7	--	86
1960	810	727	2/	2/	--	83
1961	700	628	1	--	--	71
1962	679	677	1	1	--	--
1963	742	669	2	--	--	71
1964	791	730	2	--	--	59
1965	825	750	1	--	--	74
1966	1,004	902	3	2/	2	97
1967	774	685	2/	2/	4	85
1968	774	702	4	2/	7	61
1969	771	751	9	--	9	2
1970	805	784	10	2/	10	1
1971	700	689	2/	2/	11	2/
1972	931	917	3	2/	11	--
1973	1,199	1,131	55	2/	13	--
1974	1,324	1,290	25	2/	9	--
1975	844	815	19	--	10	--
1976	1,115	1,081	24	--	7	3
1977	1,233	1,159	65	--	9	--
1978	1,332	1,248	70	--	10	4
1979 3/	1,490	1,428	46	--	14	2
1980 3/	1,493	1,443	35	--	12	3
1981 3/	1,448	1,402	26	--	16	4
1982 3/	1,387	1,340	28	--	16	3
1983 3/	1,787	1,747	23	--	17	--
1984 3/	2,000	1,934	45	--	18	3
1985 3/	2,058	1,973	64	--	17	4
1986 3/	2,631	2,429	177	2/	16	9
1987 3/	2,611	2,420	161	--	19	11
1988 3/	2,855	2,597	233	2	22	1

1/ 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Less than 500 cords.

3/ Includes logs, bolts, and wood residue used in manufacturing particleboard and waferboard.

Table 10.- -Pulpwood receipts in Michigan by species group and area of origin, 1988

(In thousand standard cords, unpeeled)

Type of material and species group	Total receipts	Origin of material				
		Michigan	Minnesota	Wisconsin	Other U.S.	Canada
ROUNDWOOD						
SOFTWOODS						
Cedar	31	31	--	--	--	--
Balsam fir	108	106	--	2	--	--
Hemlock	33	33	--	--	--	--
Jack pine	193	193	--	--	--	--
Red pine	26	26	--	--	--	--
White pine	12	12	--	--	--	--
Spruce	61	61	--	1	--	--
Tamarack	4	4	--	--	--	--
Total	467	465	--	3	--	--
HARDWOODS						
Ash	25	23	--	3	--	--
Aspen	947	899	--	48	--	--
Balsam poplar	33	33	--	--	--	--
Basswood	53	46	--	7	--	--
Beech	40	40	--	--	--	--
White birch	243	182	2	60	--	--
Yellow birch	80	67	--	12	--	--
Cottonwood	1	1	--	--	--	--
Elm	29	27	--	3	--	--
Hickory	1	1	--	--	--	--
Hard maple	283	234	--	49	--	--
Soft maple	246	221	--	25	--	--
Red oak	95	88	--	7	--	--
White oak	40	40	--	--	--	--
Other hardwoods	19	15	--	4	--	--
Total	2,137	1,917	2	218	--	--
All species	2,605	2,382	2	221	--	--
RESIDUES 2/						
Softwood	63	61	--	1	--	1
Hardwood	188	154	--	11	23	--
Total	251	215	--	12	23	1
ALL MATERIAL	2,855	2,597	2	233	23	1

1/ 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

2/ Chippable mill residues such as slabs, edgings, etc. Roundwood chips are included in roundwood.

Table 11.--Saw log production and receipts in Michigan by species group, 1984 and 1988

(In thousand board feet) 1/

Species group	Production			Receipts		
	1984	1988	Change	1984	1988	Change
Softwoods						
Cedar	15,472	11,032	-4,440	13,089	11,123	-1,966
Balsam fir	2,930	596	-2,334	793	368	-425
Hemlock	5,454	2,097	-3,357	3,864	1,916	-1,948
Jack pine	6,621	14,212	7,591	6,027	11,240	5,213
Red pine	15,159	82,668	67,509	14,594	79,675	65,081
White pine	20,364	21,375	1,011	18,765	19,461	696
Spruce	3,833	2,119	-1,714	1,906	1,978	72
Tamarack	269	23	-246	44	23	-21
Total	70,102	134,122	64,020	59,082	125,784	66,702
Hardwoods						
Ash	13,594	26,861	13,267	12,295	26,436	14,141
Aspen	85,293	113,384	28,091	80,991	104,842	23,851
Balsam poplar	3,028	3,079	51	2,684	2,878	194
Basswood	21,178	22,374	1,196	19,206	19,958	752
Beech	20,318	16,542	-3,776	19,774	16,330	-3,444
Paper birch	10,456	9,338	-1,118	9,710	8,896	-814
Yellow birch	12,559	16,251	3,692	9,919	15,488	5,569
Cottonwood	2,590	3,002	412	2,400	2,908	508
Elm	4,651	1,787	-2,864	3,387	1,388	-1,999
Hickory	1,358	2,841	1,483	917	2,426	1,509
Hard maple	114,709	104,295	-10,414	101,839	99,432	-2,407
Soft maple	46,889	63,395	16,506	42,161	61,636	19,475
Red oak	93,953	109,685	15,732	92,373	114,524	22,151
White oak	21,726	19,358	-2,368	21,516	19,277	-2,239
Walnut	1,139	896	-243	957	724	-233
Other hardwoods	6,109	6,459	350	4,759	5,658	899
Total	459,550	519,547	59,997	424,888	502,801	77,913
All species	529,652	653,669	124,017	483,970	628,585	144,615

1/ International 1/4-inch rule.

Table 12.--Saw log production by Forest Survey Unit, species group, and State of destination, Michigan ,1988

(Thousand board feet) 1/

ALL UNITS

Species	Total	Michigan	Wisconsin	Indiana
SOFTWOODS				
Cedar	11,032	10,993	39	--
Balsam fir	596	368	228	--
Hemlock	2,097	1,913	184	--
Jack pine	14,212	11,240	2,972	--
Red pine	82,668	79,531	3,137	--
White pine	21,375	19,309	2,066	--
Spruce	2,119	1,956	163	--
Tamarack	23	23	--	--
Total	134,122	125,333	8,789	--
HARDWOODS				
Ash	26,861	25,694	288	879
Aspen	113,384	102,530	10,854	--
Balsam poplar	3,079	2,878	201	--
Basswood	22,374	19,749	2,213	412
Beech	16,542	16,325	--	217
White birch	9,338	8,513	825	--
Yellow birch	16,251	15,299	952	--
Cottonwood	3,002	2,908	14	80
Elm	1,787	1,358	54	375
Hickory	2,841	2,424	8	409
Hard maple	104,295	98,063	5,699	533
Soft maple	63,395	61,342	562	1,491
Red oak	109,685	106,964	1,144	1,577
White oak	19,358	18,821	27	510
Walnut	896	724	--	172
Other hardwoods	6,459	5,655	85	719
Total	519,547	489,247	22,926	7,374
All species	653,669	614,580	31,715	7,374

(Table 12 continued on next page)

(Table 12 continued)

Species	Total	Michigan	Wisconsin	Indiana
EASTERN UPPER PENINSULA				
SOFTWOODS				
Cedar	6,344	6,305	39	--
Balsam fir	93	93	--	--
Hemlock	887	887	--	--
Jack pine	1,305	1,305	--	--
Red pine	7,956	7,952	4	--
White pine	5,168	5,168	--	--
Spruce	609	609	--	--
Tamarack	--	--	--	--
Total	22,362	22,319	43	--
HARDWOODS				
Ash	1,350	1,336	14	--
Aspen	13,733	13,616	117	--
Balsam poplar	1,342	1,294	48	--
Basswood	1,464	1,422	42	--
Beech	10,704	10,704	--	--
White birch	3,371	3,351	20	--
Yellow birch	2,778	2,778	--	--
Cottonwood	--	--	--	--
Elm	94	93	1	--
Hickory	--	--	--	--
Hard maple	20,570	20,550	20	--
Soft maple	10,864	10,859	5	--
Red oak	932	912	20	--
White oak	5	3	2	--
Walnut	--	--	--	--
Other hardwoods	320	303	17	--
Total	67,527	67,221	306	--
All species	89,889	89,540	349	--
WESTERN UPPER PENINSULA				
SOFTWOODS				
Cedar	881	881	--	--
Balsam fir	268	40	228	--
Hemlock	1,071	887	184	--
Jack pine	2,981	9	2,972	--
Red pine	6,258	3,125	3,133	--
White pine	10,479	8,413	2,066	--
Spruce	1,315	1,152	163	--
Tamarack	1	1	--	--
Total	23,254	14,508	8,746	--
HARDWOODS				
Ash	4,962	4,688	274	--
Aspen	20,783	10,046	10,737	--
Balsam poplar	1,207	1,054	153	--
Basswood	7,309	5,138	2,171	--
Beech	538	538	--	--
White birch	1,855	1,050	805	--
Yellow birch	13,118	12,166	952	--
Cottonwood	14	--	14	--
Elm	593	540	53	--
Hickory	8	--	8	--
Hard maple	56,401	50,722	5,679	--
Soft maple	11,100	10,543	557	--
Red oak	6,076	4,952	1,124	--
White oak	25	--	25	--
Walnut		--	--	--
Other hardwoods	494	426	68	--
Total	124,483	101,863	22,620	--
All species	147,737	116,371	31,366	--

(Table 12 continued on next page)

(Table 12 continued)

Species	Total	Michigan	Wisconsin	Indiana
NORTHERN LOWER PENINSULA				
SOFTWOODS				
Cedar	3,768	3,768	--	--
Balsam fir	232	232	--	--
Hemlock	120	120	--	--
Jack pine	9,904	9,904	--	--
Red pine	65,909	65,909	--	--
White pine	5,285	5,285	--	--
Spruce	192	192	--	--
Tamarack	6	6	--	--
Total	85,416	85,416	--	--
HARDWOODS				
Ash	10,618	10,618	--	--
Aspen	75,785	75,785	--	--
Balsam poplar	115	115	--	--
Basswood	10,657	10,657	--	--
Beech	4,022	4,022	--	--
White birch	3,867	3,867	--	--
Yellow birch	310	310	--	--
Cottonwood	658	658	--	--
Elm	129	129	--	--
Hickory	149	149	--	--
Hard maple	22,077	22,077	--	--
Soft maple	26,141	26,141	--	--
Red oak	72,201	72,201	--	--
White oak	7,739	7,739	--	--
Walnut	7	7	--	--
Other hardwoods	1,895	1,895	--	--
Total	236,370	236,370	--	--
All species	321,786	321,786	--	--
SOUTHERN LOWER PENINSULA				
SOFTWOODS				
Cedar	39	39	--	--
Balsam fir	3	3	--	--
Hemlock	19	19	--	--
Jack pine	22	22	--	--
Red pine	2,545	2,545	--	--
White pine	443	443	--	--
Spruce	3	3	--	--
Tamarack	16	16	--	--
Total	3,090	3,090	--	--
HARDWOODS				
Ash	9,931	9,052	--	879
Aspen	3,083	3,083	--	--
Balsam poplar	415	415	--	--
Basswood	2,944	2,532	--	412
Beech	1,278	1,061	--	217
White birch	245	245	--	--
Yellow birch	45	45	--	--
Cottonwood	2,330	2,250	--	80
Elm	971	596	--	375
Hickory	2,684	2,275	--	409
Hard maple	5,247	4,714	--	533
Soft maple	15,290	13,799	--	1,491
Red oak	30,476	28,899	--	1,577
White oak	11,589	11,079	--	510
Walnut	889	717	--	172
Other hardwoods	3,750	3,031	--	719
Total	91,167	83,793	--	7,374
All species	94,257	86,883	--	7,374

Table 13.-- Saw log production from roundwood by Forest Survey Unit, county, and species group, Michigan, 1988

(In thousand board feet) 1/

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tama-rack	Ash	Aspen	Balsam poplar	Bass-wood	Beech	White birch
EASTERN UPPER PENINSULA														
Alger	41	--	544	--	948	1,032	3	--	37	495	1	169	1,006	139
Chippewa	270	53	13	10	681	350	191	--	51	3,162	100	52	5,132	532
Delta	4,228	17	--	1,170	4,027	851	172	--	482	1,706	1,040	286	332	752
Luce	161	--	191	58	445	876	7	--	49	1,142	--	19	3,355	93
Mackinac	167	23	4	21	375	202	27	--	30	2,899	25	88	421	609
Menominee	1,465	--	--	--	432	886	207	--	668	3,132	172	722	90	989
Schoolcraft	12	--	135	46	1,048	971	2	--	33	1,197	4	128	368	257
Total	6,344	93	887	1,305	7,956	5,168	609	--	1,350	13,733	1,342	1,464	10,704	3,371
WESTERN UPPER PENINSULA														
Baraga	51	--	767	--	626	1,431	571	--	909	778	--	1,911	113	241
Dickinson	45	22	--	--	595	1,812	163	--	169	3,594	149	218	43	284
Gogebic	10	74	25	783	938	348	91	--	1,256	2,769	--	1,630	--	163
Houghton	28	--	102	--	83	478	30	--	285	1,578	--	331	41	99
Iron	107	94	71	981	1,644	2,672	154	--	494	5,913	4	888	90	558
Keweenaw	252	--	--	--	4	299	45	--	14	144	--	31	--	135
Marquette	376	14	26	9	1,397	2,885	172	1	1,033	1,700	1,054	981	249	218
Ontonagon	12	64	80	1,208	971	554	89	--	802	4,307	--	1,319	2	157
Total	881	268	1,071	2,981	6,258	10,479	1,315	1	4,962	20,783	1,207	7,309	538	1,855
NORTHERN LOWER PENINSULA														
Alcona	231	44	--	113	1,084	262	20	--	382	8,028	--	263	29	144
Alpena	965	24	--	15	271	85	13	--	131	3,407	--	36	26	208
Antrim	1	--	--	--	105	18	--	--	273	285	--	795	185	10
Arenac	7	--	--	42	33	3	1	1	276	976	--	11	2	88
Bay	--	--	--	--	--	--	--	--	185	1	--	24	--	39
Benzie	16	--	2	--	815	2	--	--	175	240	--	207	67	3
Charlevoix	177	--	--	--	16	6	--	--	235	484	--	1,249	214	45
Cheboygan	347	44	--	393	976	467	81	--	254	5,677	--	1,115	251	416
Clare	3	1	--	5	141	66	--	--	334	2,216	--	70	39	154
Crawford	--	1	--	1,019	2,423	209	2	--	37	1,747	--	126	2	82
Emmet	89	1	--	277	1,107	142	1	--	471	2,257	--	1,126	361	133
Gladwin	--	--	--	243	48	37	--	--	322	3,049	2	12	--	514
Grand Traverse	--	--	6	207	1,968	88	--	--	185	1,150	--	440	290	164
Iosco	5	1	--	124	2,845	158	1	--	274	3,061	--	39	--	--
Isabella	30	--	1	--	271	43	--	--	354	418	--	109	48	57
Kalkaska	--	3	--	246	2,845	206	2	--	59	2,411	--	265	9	57
Lake	4	--	1	308	4,760	148	--	--	573	1,720	12	309	37	4
Leelanau	--	--	2	--	2	2	--	--	503	224	--	255	348	2
Manistee	--	--	--	--	4,843	50	--	--	546	1,363	5	261	156	--
Mason	1	--	14	2	5,722	2	--	--	370	1,013	12	154	167	7
Mecosta	2	--	2	35	458	108	--	--	629	722	--	252	27	23
Midland	--	--	--	--	38	85	--	--	543	1,246	--	142	76	141
Missaukee	17	2	--	46	833	459	1	--	186	1,720	--	302	21	79
Montmorency	264	26	--	479	1,117	186	25	--	137	4,534	4	552	75	329
Newaygo	2	--	52	3	7,596	559	1	--	703	1,111	61	392	191	15
Oceana	1	--	36	1	1,547	64	--	4	333	403	1	76	667	59

(Table 13 continued on next page)

(Table 13 continued)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar	Basswood	Beech	White birch
NORTHERN LOWER PENINSULA (continued)														
Ogemaw	35	2	--	2,670	433	90	1	--	540	7,206	1	45	221	119
Osceola	21	1	3	--	1,129	79	--	--	534	3,292	--	235	87	47
Oscoda	5	2	--	1,572	4,330	741	1	--	136	4,002	--	151	2	72
Otsego	84	4	--	205	2,993	214	6	--	159	2,501	--	1,003	172	115
Presque Isle	1,444	61	--	300	1,351	296	33	1	245	5,768	16	309	108	596
Roscommon	12	15	--	1,268	2,830	252	2	--	247	2,873	1	84	7	138
Wexford	5	--	1	331	10,979	158	1	--	287	680	--	248	137	7
Total	3,768	232	120	9,904	65,909	5,285	192	6	10,618	75,785	115	10,657	4,022	3,867
SOUTHERN LOWER PENINSULA														
Allegan	--	--	--	5	86	24	--	--	741	342	--	22	108	--
Barry	--	--	--	10	194	13	3	--	362	380	--	119	78	--
Berrien	--	--	--	--	--	--	--	--	146	37	5	116	64	--
Branch	--	--	--	--	--	--	--	--	455	19	--	111	--	--
Calhoun	--	--	--	--	3	--	--	--	888	43	346	462	61	--
Cass	--	--	--	--	--	--	--	--	249	5	--	190	184	--
Clinton	--	--	--	1	--	--	--	--	175	9	--	26	--	--
Eaton	--	--	--	--	--	--	--	--	708	21	--	200	63	--
Genessee	--	--	--	--	--	--	--	--	184	3	--	78	37	--
Gratiot	--	--	--	--	14	33	--	--	278	56	--	100	11	--
Hillsdale	--	--	--	--	--	--	--	--	166	--	--	61	--	--
Huron	--	--	--	--	28	--	--	3	151	187	12	21	4	57
Ingham	--	--	--	--	--	1	--	--	330	23	1	96	17	--
Ionia	--	--	--	--	--	--	--	--	104	23	--	94	78	--
Jackson	--	--	--	--	--	--	--	--	352	24	--	74	--	--
Kalamazoo	--	--	--	--	7	17	--	--	95	16	--	4	10	--
Kent	--	--	--	--	87	9	--	--	409	54	--	111	24	--
Lapeer	--	3	--	3	28	--	--	3	257	265	11	98	44	31
Lenawee	--	--	--	--	--	--	--	--	168	6	--	101	3	--
Livingston	--	--	--	--	21	--	--	--	65	6	--	10	--	--
Macomb	8	--	--	--	--	--	--	10	44	3	--	32	15	--
Monroe	--	--	--	--	--	--	--	--	31	--	--	31	--	--
Montcalm	--	--	4	--	195	121	--	--	589	386	17	71	45	18
Muskegon	--	--	8	2	632	55	--	--	307	375	--	42	106	5
Oakland	--	--	--	--	36	1	--	--	217	6	--	14	5	--
Ottawa	31	--	--	1	531	5	--	--	140	60	--	39	141	--
Saginaw	--	--	--	--	--	31	--	--	230	100	--	8	1	46
St. Clair	--	--	7	--	--	88	--	--	471	55	--	113	53	--
St. Joseph	--	--	--	--	--	--	--	--	313	36	--	96	--	--
Sanilac	--	--	--	--	--	--	--	--	177	153	23	45	20	39
Shiawassee	--	--	--	--	--	--	--	--	489	19	--	117	39	--
Tuscola	--	--	--	--	660	45	--	--	302	347	--	141	20	49
Van Buren	--	--	--	--	23	--	--	--	142	11	--	12	21	--
Washtenaw	--	--	--	--	--	--	--	--	174	11	--	62	18	--
Wayne	--	--	--	--	--	--	--	--	22	2	--	27	8	--
Total	39	3	19	22	2,545	443	3	16	9,931	3,083	415	2,944	1,278	245
State total	11,032	596	2,097	14,212	82,668	21,375	2,119	23	26,861	113,384	3,079	22,374	16,542	9,338

(Table 13 continued on next page)

(Table 13 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	O. hard-woods	All species
EASTERN UPPER PENINSULA											
Alger	278	--	1	--	2,314	1,496	16	--	--	65	8,585
Chippewa	690	--	--	--	5,806	2,638	37	--	--	8	19,776
Delta	555	--	34	--	2,346	1,646	208	--	--	54	19,906
Luce	799	--	3	--	3,789	1,866	42	--	--	70	12,965
Mackinac	102	--	12	--	2,188	1,103	13	--	--	26	8,335
Menominee	189	--	39	--	3,076	904	601	5	--	50	13,627
Schoolcraft	165	--	5	--	1,051	1,211	15	--	--	47	6,695
Total	2,778	--	94	--	20,570	10,864	932	5	--	320	89,889
WESTERN UPPER PENINSULA											
Baraga	2,997	--	87	6	15,930	2,463	803	9	--	134	29,827
Dickinson	94	--	25	--	964	127	394	--	--	28	8,726
Gogebic	2,867	--	4	--	5,971	1,452	689	1	--	10	19,081
Houghton	959	--	63	--	7,270	1,372	861	1	--	52	13,633
Iron	1,391	14	64	2	5,943	1,042	535	11	--	93	22,765
Keweenaw	144	--	--	--	1,423	607	318	--	--	1	3,417
Marquette	1,680	--	343	--	9,775	2,660	2,050	--	--	172	26,795
Ontonagon	2,986	--	7	--	9,125	1,377	426	3	--	4	23,493
Total	13,118	14	593	8	56,401	11,100	6,076	25	--	494	147,737
NORTHERN LOWER PENINSULA											
Alcona	--	--	--	--	194	792	2,655	32	--	--	14,273
Alpena	7	--	--	--	53	828	1,082	8	--	--	7,159
Antrim	31	--	24	--	795	160	118	--	--	15	2,815
Arenac	2	92	5	--	11	472	295	8	1	2	2,328
Bay	--	74	1	--	--	134	71	39	--	--	568
Benzie	1	--	--	--	1,345	123	182	--	1	81	3,260
Charlevoix	71	--	4	--	945	128	92	--	--	32	3,698
Cheboygan	29	--	4	--	999	1,127	772	1	--	5	12,958
Clare	--	46	1	4	70	1,033	3,650	642	--	82	8,557
Crawford	1	--	--	--	189	523	3,356	87	--	--	9,804
Emmet	45	--	14	--	1,653	455	225	--	--	9	8,366
Gladwin	1	35	12	2	23	1,327	1,181	140	--	11	6,959
Grand Traverse	--	--	2	--	982	508	1,435	174	5	37	7,641
Iosco	--	94	1	--	30	355	547	50	--	--	7,585
Isabella	--	55	12	--	67	370	1,568	308	--	17	3,728
Kalkaska	4	--	1	--	757	610	949	71	--	25	8,520
Lake	--	--	3	--	1,027	1,161	9,289	1,421	--	221	20,998
Leelanau	--	--	--	--	1,023	199	306	--	--	--	2,866
Manistee	--	4	1	--	2,366	943	2,829	230	--	276	13,873
Mason	--	--	3	--	619	642	2,297	335	--	70	11,430
Mecosta	3	18	9	1	586	449	2,244	389	--	107	6,064
Midland	2	125	3	8	27	1,170	1,843	543	--	18	6,010
Missaukee	--	--	1	--	519	759	1,609	82	--	12	6,648
Montmorency	13	--	--	--	486	766	3,826	34	--	--	12,853
Newaygo	11	59	7	113	601	2,617	10,372	1,746	--	317	26,529
Oceana	7	38	2	20	1,158	2,378	3,363	765	--	311	11,234

(Table 13 continued on next page)

(Table 13 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	O. hard-woods	All species
NORTHERN LOWER PENINSULA (continued)											
Ogemaw	--	5	1	--	299	1,532	1,590	109	--	--	14,899
Osceola	14	10	3	1	1,269	614	2,528	171	--	113	10,151
Oscoda	--	--	--	--	181	992	3,789	28	--	--	16,004
Otsego	17	--	8	--	1,136	576	448	4	--	8	9,653
Presque Isle	50	--	--	--	493	826	839	--	--	--	12,736
Roscommon	--	3	--	--	228	1,226	5,341	248	--	4	14,779
Wexford	1	--	7	--	1,946	346	1,510	74	--	122	16,840
Total	310	658	129	149	22,077	26,141	72,201	7,739	7	1,895	321,786
					SOUTHERN LOWER PENINSULA						
Allegan	2	9	16	80	91	711	2,602	900	--	294	6,033
Barry	5	5	44	185	1,010	1,269	3,045	502	1	209	7,434
Berrien	2	104	134	26	261	221	496	127	--	555	2,294
Branch	--	41	54	94	75	1,063	508	291	48	132	2,891
Calhoun	6	59	86	270	91	949	904	547	45	400	5,160
Cass	7	14	138	76	190	439	500	259	113	454	2,818
Clinton	--	34	2	45	30	221	231	58	24	5	861
Eaton	--	3	70	116	349	445	103	129	16	14	2,237
Genessee	--	19	10	12	161	186	239	218	11	14	1,172
Gratiot	--	63	1	--	69	326	898	272	--	8	2,129
Hillsdale	--	8	28	42	326	144	131	89	17	34	1,046
Huron	--	288	5	3	29	358	2	--	--	14	1,162
Ingham	--	101	33	64	157	196	240	240	1	47	1,547
Ionia	--	--	8	3	72	246	355	38	8	19	1,048
Jackson	4	11	19	471	--	435	2,048	753	21	411	4,623
Kalamazoo	2	6	26	56	12	347	663	61	--	280	1,602
Kent	1	10	25	51	491	701	2,584	436	--	86	5,079
Lapeer	6	184	31	69	237	427	508	477	--	15	2,697
Lenawee	--	21	14	194	285	188	126	179	32	36	1,353
Livingston	--	--	2	66	--	132	552	286	--	13	1,153
Macomb	3	25	22	13	59	183	--	20	--	3	440
Monroe	--	35	14	33	38	47	197	86	31	10	553
Montcalm	--	--	40	54	118	1,010	2,559	981	--	10	6,218
Muskegon	--	6	2	36	133	1,334	5,207	998	14	158	9,420
Oakland	--	1	10	44	53	117	691	255	5	12	1,467
Ottawa	3	11	8	4	93	418	740	125	--	13	2,363
Saginaw	--	223	6	17	82	293	360	575	--	6	1,978
St. Clair	4	170	7	39	132	233	874	1,016	--	48	3,310
St. Joseph	--	--	35	257	44	473	1,125	136	288	181	2,984
Sanilac	--	362	1	8	62	474	15	6	--	6	1,391
Shiawassee	--	80	4	47	98	331	553	300	14	60	2,151
Tuscola	--	396	11	5	216	778	120	79	2	22	3,193
Van Buren	--	7	54	51	140	347	704	244	4	109	1,869
Washtenaw	--	25	5	149	38	222	539	850	194	69	2,356
Wayne	--	9	6	4	5	26	57	56	--	3	225
Total	45	2,330	971	2,684	5,247	15,290	30,476	11,589	889	3,750	94,257
State total	16,251	3,002	1,787	2,841	104,295	63,395	109,685	19,358	896	6,459	653,669

1/ International 1/4-inch rule.

Table 14.-- Saw log receipts in Michigan by Forest Survey Unit, species group, and State of origin, 1988

(In thousand board feet)

	ALL UNITS				
Species group	Total	Michigan	Wisconsin	Ohio	Indiana
SOFTWOODS					
Cedar	11,123	10,993	130	--	--
Balsam fir	368	368	--	--	--
Hemlock	1,916	1,913	3	--	
Jack pine	11,240	11,240	--	--	--
Red pine	79,675	79,531	144	--	--
White pine	19,461	19,309	152	--	--
Spruce	1,978	1,956	22	--	--
Tamarack	23	23	--	--	--
Total	125,784	125,333	451	--	--
HARDWOODS					
Ash	26,436	25,694	207	375	160
Aspen	104,842	102,530	2,312	--	--
Balsam poplar	2,878	2,878	--	--	--
Basswood	19,958	19,749	209	--	--
Beech	16,330	16,325	5	--	--
Paper birch	8,896	8,513	383	--	--
Yellow birch	15,488	15,299	189	--	--
Cottonwood	2,908	2,908	--	--	--
Elm	1,388	1,358	30	--	--
Hickory	2,426	2,424	2	--	--
Hard maple	99,432	98,063	1,369	--	--
Soft maple	61,636	61,342	294	--	--
Red oak	114,524	106,964	5,781	1,245	534
White oak	19,277	18,821	10	312	134
Walnut	724	724	--	--	--
Other hardwoods	5,658	5,655	3	--	--
Total	502,801	489,247	10,794	1,932	828
All species	628,585	614,580	11,245	1,932	828

(Table 14 continued on next page)

(Table 14 continued)

Species group	Total	Michigan	Wisconsin	Ohio	Indiana
		EASTERN UPPER PENINSULA			
SOFTWOODS					
Cedar	6,411	6,281	130	--	--
Balsam fir	93	93	--	--	--
Hemlock	1,427	1,427	--	--	--
Jack pine	1,180	1,180	--	--	--
Red pine	9,886	9,761	125	--	--
White pine	9,532	9,406	126	--	--
Spruce	1,476	1,473	3	--	--
Total	30,005	29,621	384	--	--
HARDWOODS					
Ash	1,298	1,145	153	--	--
Aspen	14,648	14,530	118	--	--
Balsam poplar	2,346	2,346	--	--	--
Basswood	2,178	2,101	77	--	--
Beech	10,561	10,556	5	--	--
White birch	3,225	3,106	119	--	--
Yellow birch	3,060	3,045	15	--	--
Elm	117	95	22	--	--
Hickory	2	--	2	--	--
Hard maple	24,122	23,914	208	--	--
Soft maple	12,422	12,237	185	--	--
Red oak	7,697	2,331	5,366	--	--
White oak	8	3	5	--	--
Other hardwoods	354	351	3	--	--
Total	82,038	75,760	6,278	--	--
All species	112,043	105,381	6,662	--	--
		WESTERN UPPER PENINSULA			
SOFTWOODS					
Cedar	874	874	--	--	--
Balsam fir	40	40	--	--	--
Hemlock	350	347	3	--	--
Jack pine	9	9	--	--	--
Red pine	1,024	1,005	19	--	--
White pine	4,102	4,076	26	--	--
Spruce	307	288	19	--	--
Tamarack	1	1	--	--	--
Total	6,707	6,640	67	--	--
HARDWOODS					
Ash	4,904	4,850	54	--	--
Aspen	9,057	6,863	2,194	--	--
Balsam poplar	2	2	--	--	--
Basswood	4,576	4,444	132	--	--
Beech	542	542	--	--	--
White birch	1,223	959	264	--	--
Yellow birch	12,073	11,899	174	--	--
Elm	546	538	8	--	--
Hard maple	48,484	47,323	1,161	--	--
Soft maple	8,856	8,747	109	--	--
Red oak	3,937	3,522	415	--	--
White oak	5	--	5	--	--
Other hardwoods	378	378	--	--	--
Total	94,583	90,067	4,516	--	--
All species	101,290	96,707	4,583	--	--

(Table 14 continued on next page)

(Table 14 continued)

Species group	Total	Michigan	Wisconsin	Ohio	Indiana
		NORTHERN LOWER PENINSULA			
SOFTWOODS					
Cedar	3,738	3,738	--	--	--
Balsam fir	226	226	--	--	--
Hemlock	122	122	--	--	--
Jack pine	9,992	9,992	--	--	--
Red pine	66,716	66,716	--	--	--
White pine	5,275	5,275	--	--	--
Spruce	192	192	--	--	--
Tamarack	6	6	--	--	--
Total	86,267	86,267	--	--	--
HARDWOODS					
Ash	8,724	8,724	--	--	--
Aspen	76,136	76,136	--	--	--
Balsam poplar	20	20	--	--	--
Basswood	10,199	10,199	--	--	--
Beech	3,841	3,841	--	--	--
White birch	3,895	3,895	--	--	--
Yellow birch	273	273	--	--	--
Cottonwood	559	559	--	--	--
Elm	70	70	--	--	--
Hickory	59	59	--	--	--
Hard maple	20,378	20,378	--	--	--
Soft maple	20,902	20,902	--	--	--
Red oak	67,177	67,177	--	--	--
White oak	5,118	5,118	--	--	--
Walnut	7	7	--	--	--
Other hardwoods	1,561	1,561	--	--	--
Total	218,919	218,919	--	--	--
All species	305,186	305,186	--	--	--
		SOUTHERN LOWER PENINSULA			
SOFTWOODS					
Cedar	100	100	--	--	--
Balsam fir	9	9	--	--	--
Hemlock	17	17	--	--	--
Jack pine	59	59	--	--	--
Red pine	2,049	2,049	--	--	--
White pine	552	552	--	--	--
Spruce	3	3	--	--	--
Tamarack	16	16	--	--	--
Total	2,805	2,805	--	--	--
HARDWOODS					
Ash	11,510	10,975	--	375	160
Aspen	5,001	5,001	--	--	--
Balsam poplar	510	510	--	--	--
Basswood	3,005	3,005	--	--	--
Beech	1,386	1,386	--	--	--
White birch	553	553	--	--	--
Yellow birch	82	82	--	--	--
Cottonwood	2,349	2,349	--	--	--
Elm	655	655	--	--	--
Hickory	2,365	2,365	--	--	--
Hard maple	6,448	6,448	--	--	--
Soft maple	19,456	19,456	--	--	--
Red oak	35,713	33,934	--	1,245	534
White oak	14,146	13,700	--	312	134
Walnut	717	717	--	--	--
Other hardwoods	3,365	3,365	--	--	--
Total	107,261	104,501	--	1,932	828
All species	110,066	107,306	--	1,932	828

1/ International 1/4-inch rule.

Table 15.--Veneer log production and receipts in Michigan for selected years, 1946-1988

(In thousand board feet) 1/

Year	Production	Receipts
1946	78,858	46,055
1948	77,684	53,899
1950	53,568	37,404
1952	40,219	28,547
1954	34,499	21,872
1956	39,655	23,564
1958	19,958	12,597
1960	18,487	12,075
1963	15,300	7,598
1965	20,392	12,428
1966	21,942	12,782
1968	19,333	9,573
1969	19,194	14,970
1970	15,039	6,729
1972	18,479	5,324
1974 2/	25,949	25,322
1975	26,079	26,851
1976	33,373	28,764
1977	42,738	30,838
1978	35,030	39,179
1980	36,761	27,287
1984	31,753	13,737
1988	36,201	39,220

1/ International 1/4-inch rule.

2/ Includes veneer logs received at Iron Wood Products Co.; such receipts are not shown before 1974.

Table 16.--Veneer log production and receipts by species group in Michigan, 1984 and 1988

(In thousand board feet) 1/

Species group	Production			Receipts		
	1984	1988	Change	1984	1988	Change
Red pine	5,030	176	-4,854	0	2,316	2,316
White pine	1,366	973	-393	0	1,912	1,912
Ash	1,193	1,059	-134	829	920	91
Aspen	270	4,974	4,704	114	15,148	15,034
Basswood	413	1,075	662	267	275	8
Beech	729	773	44	263	247	-16
White birch	1,193	1,088	-105	826	990	164
Yellow birch	2,870	2,617	-253	1,323	1,725	402
Cottonwood	400	286	-114	457	400	-57
Elm	141	56	-85	6	92	86
Hickory	4	51	47	0	68	68
Hard maple	9,774	11,386	1,612	4,169	6,837	2,668
Soft maple	347	755	408	273	283	10
Red oak	6,414	6,087	-327	2,867	1,896	-971
White oak	980	1,309	329	1,953	3,159	1,206
Walnut	253	390	137	104	196	92
Other species	376	3,146	2,770	288	2,756	2,468
All species	31,753	36,201	4,448	13,739	39,220	25,481

1/ International 1/4-inch rule.

Table 17.-- Veneer log and bolt production by species group and State or country of destination, 1988

(In thousand board feet) 1/

Species group	Total	Destination						
		Michigan	Wisconsin	Ohio	Indiana	Iowa	Other States	Canada
SOFTWOODS								
Cedar	--	--	--	--	--	--	--	--
Balsam fir	99	99	--	--	--	--	--	--
Hemlock	--	--	--	--	--	--	--	--
Jack pine	52	52	--	--	--	--	--	--
Red pine	176	176	--	--	--	--	--	--
White pine	973	114	155	--	1	--	--	703
Spruce	130	130	--	--	--	--	--	--
Tamarack	6	6	--	--	--	--	--	--
Total	143	577	155	--	1	--	--	703
HARDWOODS								
Ash	1,059	727	262	47	20	--	3	--
Aspen	4,974	4,705	269	--	--	--	--	--
Balsam poplar	72	72	--	--	--	--	--	--
Basswood	1,075	266	809	--	--	--	--	--
Beech	773	247	526	--	--	--	--	--
White birch	1,088	990	87	--	11	--	--	--
Yellow birch	2,617	1,725	854	--	38	--	--	--
Cottonwood	286	286	--	--	--	--	--	--
Elm	56	28	--	--	--	23	5	--
Hickory	51	48	--	--	--	--	3	--
Hard maple	13,860	6,471	6,506	563	285	22	13	--
Soft maple	755	283	470	--	2	--	--	--
Red oak	6,087	1,459	2,599	567	1,454	--	8	--
White oak	1,309	519	3	97	667	23	--	--
Walnut	390	2	--	40	348	--	--	--
Other hardwoods	313	218	1	9	85	--	--	--
Total	34,765	18,046	12,386	1,323	2,910	68	32	--
All species	36,201	18,623	12,541	1,323	2,911	68	32	703

1/ International 1/4-inch rule.

Table 18.--Veneer log receipts in Michigan by area of origin for selected years, 1946-1988

(In thousand board feet) 1/

Year	All areas	Area of origin				
		Michigan	Wisconsin	Minnesota	Other States	2/ Canada
1946	46,055	44,534	--	--	956	565
1948	53,899	50,151	127	--	699	2,922
1950	37,404	33,125	454	73	477	3,275
1952	28,547	24,077	1,046	341	650	2,433
1954	21,872	18,596	582	183	137	2,374
1956	23,564	20,341	105	177	80	2,861
1958	12,597	10,785	80	166	40	1,526
1960	12,075	8,628	450	500	245	2,252
1963	7,598	5,315	495	235	165	1,388
1965	12,428	10,344	805	102	180	997
1966	12,782	10,654	585	138	206	1,199
1968	9,573	8,375	332	173	283	410
1969	14,970	12,663	1,498	300	59	450
1970	6,729	5,399	79	77	246	928
1972	5,324	4,565	66	33	--	660
1974 3/	25,322	12,724	11,136	1,092	--	370
1975	26,851	15,609	10,885	357	--	--
1976	28,764	18,516	9,830	418	--	--
1977	30,838	30,378	--	--	460	--
1978	39,179	22,597	15,000	1,000	525	57
1980	27,287	22,087	5,200	--	--	--
1984	13,737	11,052	146	520	2,019	--
1988	39,220	18,623	16,502	--	4,095	--

1/ International 1/4-inch rule.

2/ Includes only logs and bolts shipped to Canadian mills for processing.

3/ Includes all veneer logs received at Iron Wood Products Co.; such receipts are not shown before 1974.

Table 19.-- Veneer log and bolt receipts in Michigan by species group and area of origin, 1988

(In thousand board feet) 1/

Species group	Total	Michigan	Wisconsin	Indiana	Ohio	Illinois	Pennsylvania	Kentucky	Tennessee	Other
SOFTWOODS										
Balsam fir	198	99	99	--	--	--	--	--	--	--
Hemlock	162	--	162	--	--	--	--	--	--	--
Jack pine	1,059	52	1,007	--	--	--	--	--	--	--
Red pine	2,316	176	2,140	--	--	--	--	--	--	--
White pine	1,912	114	1,756	22	10	--	10	--	--	--
Spruce	675	130	545	--	--	--	--	--	--	--
Tamarack	29	6	23	--	--	--	--	--	--	--
Total	6,351	577	5,732	22	10	--	10	--	--	--
HARDWOODS										
Ash	920	727	--	22	12	21	34	21	10	73
Aspen	15,148	4,705	10,443	--	--	--	--	--	--	--
Balsam poplar	72	72	--	--	--	--	--	--	--	--
Basswood	275	266	9	--	--	--	--	--	--	--
Beech	247	247	--	--	--	--	--	--	--	--
White birch	990	990	--	--	--	--	--	--	--	--
Yellow birch	1,725	1,725	--	--	--	--	--	--	--	--
Cottonwood	400	286	--	114	--	--	--	--	--	--
Elm	92	28	--	27	9	24	--	4	--	--
Hickory	68	48	--	20	--	--	--	--	--	--
Hard maple	6,837	6,471	318	12	2	--	34	--	--	--
Soft maple	283	283	--	--	--	--	--	--	--	--
Red oak	1,896	1,459	--	133	55	54	153	5	37	--
White oak	3,159	519	--	646	484	510	115	328	255	302
Walnut	196	2	--	104	28	10	1	12	4	35
Other hardwoods	561	218	--	151	52	--	104	31	5	--
Total	32,869	18,046	10,770	1,229	642	619	441	401	311	410
All species	39,220	18,623	16,502	1,251	652	619	451	401	311	410

1/ International 1/4-inch rule.

Table 20.-- Growing stock removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Michigan, 1988

(In thousand cubic feet)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar	Basswood	Beech	White birch
EASTERN UPPER PENINSULA														
Alger	178	488	461	502	179	222	297	19	59	529	155	208	542	339
Chippewa	224	532	133	528	136	108	401	20	18	1,458	118	62	1,077	551
Delta	2,575	1,734	315	2,297	763	307	1,586	66	190	3,298	693	481	351	1,578
Luce	185	460	109	1,048	135	194	335	19	17	550	46	32	823	167
Mackinac	189	712	74	176	119	73	457	15	21	1,585	138	106	162	440
Menominee	1,495	1,098	216	502	117	240	713	47	210	4,739	322	404	195	2,026
Schoolcraft	292	888	236	1,059	300	261	575	36	40	996	206	195	586	663
Total	5,138	5,912	1,544	6,112	1,749	1,405	4,364	222	555	13,155	1,678	1,488	3,736	5,764
WESTERN UPPER PENINSULA														
Baraga	47	118	227	721	110	257	188	4	290	1,015	--	531	89	490
Dickinson	402	1,164	269	565	275	415	936	51	75	4,089	167	211	11	1,076
Gogebic	11	51	32	304	244	95	262	1	360	1,870	5	619	17	320
Houghton	100	286	112	441	53	129	210	15	129	963	9	176	41	365
Iron	111	374	86	548	441	522	778	41	201	5,131	24	304	54	1,059
Keweenaw	50	1	--	12	6	58	9	--	9	69	--	6	7	28
Marquette	486	1,101	426	2,134	271	599	874	53	321	5,942	516	625	238	2,055
Ontonagon	6	43	29	782	200	131	37	1	459	6,815	107	662	11	377
Total	1,213	3,138	1,181	5,507	1,600	2,206	3,294	166	1,844	25,894	828	3,134	468	5,770
NORTHERN LOWER PENINSULA														
Alcona	76	12	--	912	228	53	9	--	128	4,445	102	61	12	334
Alpena	273	10	--	97	60	15	11	--	52	2,191	50	12	7	226
Antrim	--	--	--	--	48	3	--	--	54	398	--	161	36	2
Arenac	1	--	--	85	5	8	--	--	55	462	22	2	--	50
Bay	--	--	--	--	--	--	--	--	37	2	--	5	--	7
Benzie	3	--	--	8	141	--	--	--	46	600	6	57	27	23
Charlevoix	46	--	--	14	8	9	--	--	54	167	--	343	42	18
Cheboygan	92	93	1	301	265	91	33	--	75	2,859	22	237	50	332
Clare	1	--	--	130	153	44	--	--	85	3,265	--	24	21	149
Crawford	--	1	--	1,669	489	36	--	--	7	1,727	--	25	1	67
Emmet	25	26	8	210	267	45	13	--	103	1,270	14	224	66	64
Gladwin	--	--	--	52	98	30	--	--	66	1,769	24	2	5	186
Grand Traverse	10	--	1	529	497	16	--	1	44	1,396	--	102	65	52
Iosco	24	--	--	266	544	26	15	--	74	1,289	8	9	1	115
Isabella	6	--	--	--	115	41	--	--	82	1,283	--	22	11	18
Kalkaska	--	1	--	426	618	37	--	--	15	1,279	--	79	7	36
Lake	2	--	--	369	848	25	--	--	146	3,034	2	74	26	49
Leelanau	5	--	--	--	--	--	--	1	100	45	--	58	64	--
Manistee	--	--	--	3	841	8	--	--	122	2,083	18	87	62	123
Mason	--	--	2	--	986	--	--	--	86	1,305	2	38	38	47
Mecosta	--	--	--	10	101	18	--	--	130	2,270	--	51	5	20
Midland	--	--	--	--	6	15	--	--	119	1,796	46	36	14	127
Missaukee	3	--	--	153	347	78	--	--	58	2,116	--	75	5	58
Montmorency	147	6	--	825	254	32	66	--	54	3,396	24	181	39	384
Newaygo	--	--	8	16	1,334	96	--	--	161	1,797	12	78	42	16
Oceana	--	--	6	--	266	10	--	1	94	1,604	--	16	162	24

(Table 20 continued on next page)

(Table 20 continued)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar	Basswood	Beech	White birch
NORTHERN LOWER PENINSULA (continued)														
Ogemaw	10	1	--	781	129	32	--	--	112	1,974	7	24	40	147
Osceola	4	--	--	10	228	14	--	--	125	2,812	--	47	23	58
Oscoda	1	39	--	1,000	816	126	--	--	48	2,365	23	33	1	160
Otsego	21	1	--	572	576	52	1	--	47	1,210	--	199	46	26
Presque Isle	559	129	--	596	254	51	65	--	97	3,319	61	68	24	527
Roscommon	2	3	--	1,058	535	43	--	--	51	3,371	5	87	42	124
Wexford	5	--	--	410	2,280	26	--	--	91	1,689	--	71	51	79
Total	1,316	322	26	10,502	13,337	1,080	213	3	2,618	60,588	448	2,588	1,035	3,648
SOUTHERN LOWER PENINSULA														
Allegan	--	--	--	1	60	4	--	--	159	127	--	5	19	--
Barry	--	--	--	2	33	2	1	--	73	77	--	24	13	--
Berrien	--	--	--	4	--	--	--	--	31	9	1	24	12	--
Branch	--	--	--	--	--	--	--	--	90	4	--	22	--	--
Calhoun	--	--	--	--	--	--	--	--	192	56	68	92	11	--
Cass	--	--	--	4	--	--	--	--	54	1	--	38	34	--
Clinton	--	--	--	--	--	--	--	--	35	1	--	5	--	--
Eaton	--	--	--	--	--	--	--	--	141	4	--	39	11	--
Genessee	--	--	--	--	--	--	--	--	36	--	--	16	7	--
Gratiot	--	--	--	--	2	5	--	--	59	113	--	21	2	--
Hillsdale	--	--	--	--	--	--	--	--	32	--	--	12	--	--
Huron	--	--	--	--	4	--	--	1	30	34	2	4	1	10
Ingham	--	--	--	--	--	--	--	--	66	6	--	20	3	--
Ionia	--	--	--	--	--	--	--	--	21	11	--	19	13	--
Jackson	--	--	--	--	--	--	--	--	69	5	--	15	--	--
Kalamazoo	--	--	--	--	1	3	--	--	23	9	--	1	2	--
Kent	--	--	--	--	15	1	--	--	91	69	--	22	5	--
Lapeer	--	1	--	1	4	--	--	1	52	50	2	20	8	6
Lenawee	--	--	--	--	--	--	--	--	33	1	--	21	--	--
Livingston	--	--	--	--	3	--	--	--	13	1	--	2	--	--
Macomb	1	--	--	--	--	--	--	2	8	--	--	6	2	--
Monroe	--	--	--	--	--	--	--	--	6	--	--	6	--	--
Montcalm	--	--	1	--	36	20	--	--	144	542	3	15	12	8
Muskegon	--	--	1	--	111	9	--	--	76	515	--	8	29	2
Oakland	--	--	--	--	6	--	--	--	44	1	--	2	1	--
Ottawa	6	--	--	--	91	1	--	--	34	29	--	7	27	--
Saginaw	--	--	--	--	--	5	--	--	46	19	--	1	--	9
St. Clair	--	--	1	--	--	15	--	--	93	11	--	23	9	--
St. Joseph	--	--	--	--	--	--	--	--	69	20	--	20	--	--
Sanilac	--	--	--	--	--	--	--	--	35	28	5	8	3	7
Shiawassee	--	--	--	--	--	--	--	--	97	4	--	23	7	--
Tuscola	--	--	--	--	112	7	--	--	60	65	--	28	3	9
Van Buren	--	--	--	--	9	--	--	--	40	10	--	2	5	--
Washtenaw	--	--	--	--	--	--	--	--	35	2	--	12	3	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	7	1	3	12	487	72	1	4	2,087	1,824	81	583	242	51
State total	7,674	9,373	2,754	22,133	17,173	4,763	7,872	395	7,104	101,461	3,035	7,793	5,481	15,233

(Table 20 continued on next page)

(Table 20 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	O. hard-woods	All species
EASTERN UPPER PENINSULA											
Alger	376	--	105	--	1,562	976	94	--	--	96	7,387
Chippewa	222	--	39	--	1,325	813	37	--	--	11	7,813
Delta	601	--	287	--	1,553	1,485	189	--	--	133	20,482
Luce	247	--	23	--	1,082	533	16	--	--	27	6,048
Mackinac	120	--	68	--	597	434	22	--	--	23	5,531
Menominee	355	--	185	--	1,396	948	238	1	--	108	15,555
Schoolcraft	457	--	116	--	1,628	1,383	55	--	--	57	10,029
Total	2,378	--	823	--	9,143	6,572	651	1	--	455	72,845
WESTERN UPPER PENINSULA											
Baraga	940	--	73	1	4,402	1,252	325	1	--	216	11,297
Dickinson	222	--	101	--	762	517	167	--	--	67	11,542
Gogebic	959	--	93	--	2,813	1,276	409	--	--	162	9,903
Houghton	425	--	60	--	2,388	757	319	--	--	111	7,089
Iron	524	2	65	--	2,226	793	244	2	--	139	13,669
Keweenaw	59	--	--	--	407	152	158	--	--	13	1,044
Marquette	874	--	298	--	3,511	1,867	717	--	--	212	23,120
Ontonagon	829	--	151	--	3,341	843	279	--	--	59	15,162
Total	4,832	2	841	1	19,850	7,457	2,618	3	--	979	92,826
NORTHERN LOWER PENINSULA											
Alcona	--	--	--	--	57	413	871	27	--	--	7,740
Alpena	1	--	--	--	20	306	301	8	--	--	3,640
Antrim	6	--	5	--	240	173	22	--	--	2	1,150
Arenac	--	22	1	--	2	120	96	8	--	--	939
Bay	--	15	--	--	--	27	13	7	--	--	113
Benzie	12	--	--	--	308	140	74	28	--	33	1,506
Charlevoix	14	--	1	--	238	41	19	--	--	6	1,020
Cheboygan	6	--	1	--	216	636	213	--	--	1	5,524
Clare	--	26	--	1	18	453	968	206	--	22	5,566
Crawford	--	--	--	--	215	248	899	36	--	--	5,420
Emmet	8	--	2	--	338	367	41	--	--	5	3,096
Gladwin	--	27	2	--	5	476	313	86	--	2	3,143
Grand Traverse	3	--	--	--	214	157	303	74	1	21	3,486
Iosco	--	19	--	--	32	178	248	16	--	--	2,864
Isabella	--	10	2	--	13	114	317	72	--	3	2,109
Kalkaska	4	--	--	--	199	250	216	34	--	18	3,219
Lake	13	--	14	--	241	635	2,264	718	--	54	8,514
Leelanau	--	--	--	--	210	60	57	--	--	--	600
Manistee	12	1	--	--	616	549	766	253	--	73	5,617
Mason	--	--	14	--	138	324	533	175	--	22	3,710
Mecosta	--	3	1	--	108	104	411	73	--	24	3,329
Midland	--	67	--	1	5	648	657	177	--	3	3,717
Missaukee	--	--	--	--	122	454	386	89	--	2	3,946
Montmorency	2	--	--	--	288	527	1,256	8	--	--	7,489
Newaygo	4	12	15	26	142	937	2,391	832	--	68	7,987
Oceana	9	54	--	3	234	683	808	333	--	62	4,369

(Table 20 continued on next page)

(Table 20 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	O. hard-woods	All species
NORTHERN LOWER PENINSULA (continued)											
Ogemaw	--	1	--	--	55	342	403	27	--	--	4,085
Osceola	5	2	--	--	264	261	504	109	--	35	4,501
Oscoda	--	--	--	--	51	489	1,125	26	--	1	6,304
Otsego	3	--	1	--	324	363	115	1	--	1	3,559
Presque Isle	9	--	--	--	123	514	350	10	--	--	6,756
Roscommon	--	--	--	--	41	574	1,344	76	--	1	7,357
Wexford	15	--	1	--	443	370	416	178	--	59	6,184
Total	126	259	60	31	5,520	11,933	18,700	3,687	1	518	138,559
SOUTHERN LOWER PENINSULA											
Allegan	--	12	30	25	22	245	644	316	--	60	1,729
Barry	1	1	35	35	220	253	627	115	--	42	1,554
Berrien	--	23	29	4	70	49	102	23	--	124	505
Branch	--	8	10	17	19	212	104	65	11	26	588
Calhoun	1	12	58	69	19	355	208	172	8	81	1,402
Cass	1	2	52	14	39	97	108	63	29	95	631
Clinton	--	7	--	8	6	45	43	10	9	1	170
Eaton	--	--	14	21	69	89	19	23	5	2	437
Genessee	--	3	2	2	34	37	45	40	2	2	226
Gratiot	--	12	--	--	14	72	170	53	--	1	524
Hillsdale	--	1	6	8	64	29	24	16	5	7	204
Huron	--	58	1	--	5	71	--	--	--	2	223
Ingham	--	21	6	11	31	38	45	44	--	9	300
Ionia	--	--	7	--	15	49	68	7	3	3	216
Jackson	1	2	3	86	--	86	379	136	5	82	869
Kalamazoo	--	1	19	22	2	80	139	12	--	56	370
Kent	--	2	25	9	114	170	572	116	--	17	1,228
Lapeer	1	36	6	12	42	85	92	86	--	2	507
Lenawee	--	4	2	36	58	37	24	32	7	7	262
Livingston	--	--	--	12	--	26	106	53	--	2	218
Macomb	--	5	5	2	10	36	--	3	--	--	80
Monroe	--	7	2	6	9	9	37	16	7	2	107
Montcalm	--	--	76	14	28	260	550	298	--	3	2,010
Muskegon	1	1	14	7	27	411	1,263	359	2	31	2,867
Oakland	--	--	2	8	9	23	125	46	1	2	270
Ottawa	--	25	15	1	30	153	188	49	--	2	658
Saginaw	--	45	1	3	16	59	66	104	--	1	375
St. Clair	1	33	1	7	23	47	158	183	--	9	614
St. Joseph	--	--	21	70	11	109	239	41	78	36	714
Sanilac	--	73	--	1	11	93	2	1	--	1	268
Shiawassee	--	16	1	8	19	66	104	54	2	12	413
Tuscola	--	79	2	1	39	155	22	14	--	5	601
Van Buren	--	12	51	23	44	108	166	76	3	24	573
Washtenaw	--	5	1	27	8	45	102	160	49	13	462
Wayne	--	--	--	--	--	--	--	--	--	--	--
Total	7	506	497	569	1,127	3,699	6,541	2,786	226	762	22,175
State total	7,343	767	2,221	601	35,640	29,661	28,510	6,477	227	2,714	326,405

Table 21.-- Sawtimber removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Michigan, 1988

(In thousand board feet) 1/

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tama-rack	Ash	Aspen	Balsam poplar	Bass-wood	Beech	White birch
EASTERN UPPER PENINSULA														
Alger	468	1,314	1,453	1,085	979	1,124	799	50	113	1,132	227	431	2,055	600
Chippewa	697	1,456	339	1,146	722	465	1,160	54	65	4,205	233	128	5,561	1,013
Delta	6,951	4,677	786	5,588	4,133	1,237	4,261	179	628	6,272	1,772	910	1,118	2,864
Luce	556	1,239	377	2,301	592	966	906	48	62	1,523	67	62	3,976	312
Mackinac	568	1,928	185	393	531	295	1,238	43	52	4,174	221	218	674	1,086
Menominee	3,328	2,959	543	1,085	532	1,093	2,008	128	798	10,182	595	1,117	568	3,705
Schoolcraft	774	2,392	665	2,315	1,336	1,188	1,551	96	85	2,275	303	379	1,520	1,156
Total	13,342	15,965	4,348	13,913	8,825	6,368	11,923	598	1,803	29,763	3,418	3,245	15,472	10,736
WESTERN UPPER PENINSULA														
Baraga	150	317	991	1,560	621	1,433	748	13	1,082	2,073	--	2,164	296	889
Dickinson	1,011	3,145	672	1,223	1,015	2,041	2,591	136	233	8,603	353	468	54	1,782
Gogebic	35	168	96	1,073	1,129	432	745	3	1,439	4,578	4	2,084	47	582
Houghton	272	771	335	953	178	588	580	44	392	2,478	7	493	127	597
Iron	356	1,050	256	1,705	2,012	2,784	2,160	113	655	11,576	38	1,093	189	1,958
Keweenaw	242	3	--	26	17	310	46	--	24	193	--	31	20	139
Marquette	1,365	2,973	1,079	4,619	1,452	3,091	2,422	142	1,223	10,536	1,524	1,631	756	3,164
Ontonagon	25	145	115	2,330	1,035	632	133	2	1,124	14,046	117	1,775	30	545
Total	3,456	8,572	3,544	13,489	7,459	11,311	9,425	453	6,172	54,083	2,043	9,739	1,519	9,656
NORTHERN LOWER PENINSULA														
Alcona	267	51	--	2,889	1,170	278	33	--	466	11,701	150	281	45	596
Alpena	1,039	42	--	233	297	83	35	--	172	5,478	72	43	33	486
Antrim	1	--	--	--	178	17	--	--	278	849	--	815	189	10
Arenac	7	--	--	228	35	23	1	1	282	1,288	47	11	2	169
Bay	--	--	--	--	--	--	--	--	189	5	--	25	--	40
Benzie	17	--	2	17	805	2	--	--	195	1,128	6	235	96	29
Charlevoix	182	--	--	32	27	29	--	--	250	549	--	1,357	223	61
Cheboygan	381	334	3	1,017	1,176	495	133	--	285	7,974	26	1,173	263	729
Clare	3	1	--	320	458	145	--	--	372	7,215	--	95	77	406
Crawford	--	6	--	5,205	2,567	205	3	--	38	3,910	--	130	5	157
Emmet	103	94	26	811	1,283	218	46	--	490	3,433	12	1,150	365	168
Gladwin	--	--	--	239	272	97	--	--	334	5,063	62	12	13	709
Grand Traverse	13	--	6	1,445	2,331	89	--	3	199	2,926	--	467	312	195
Iosco	57	1	--	709	2,940	155	38	--	310	3,921	13	43	4	197
Isabella	29	--	1	--	435	126	--	--	378	2,684	--	113	52	72
Kalkaska	--	3	--	1,409	3,112	211	2	--	64	3,434	--	302	17	90
Lake	6	--	1	962	4,758	147	--	--	622	7,871	12	333	73	64
Leelanau	8	--	2	--	2	2	--	3	513	196	--	271	348	2
Manistee	1	--	--	7	4,788	50	--	--	574	4,328	22	306	215	126
Mason	2	--	13	3	5,633	2	--	--	394	2,764	12	168	189	64
Mecosta	2	--	2	39	507	106	--	--	650	4,077	--	257	27	46
Midland	--	--	--	--	38	83	--	--	570	4,088	109	156	80	369
Missaukee	17	2	--	424	1,332	449	1	--	222	4,388	--	330	26	141
Montmorency	466	25	--	2,281	1,251	182	174	--	173	8,613	39	629	101	818
Newaygo	2	--	51	36	7,557	547	1	--	741	3,688	62	400	205	30
Oceana	1	--	36	1	1,522	63	--	4	374	2,959	1	77	883	78

(Table 21 continued on next page)

(Table 21 continued)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar	Basswood	Beech	White birch
NORTHERN LOWER PENINSULA (continued)														
Ogemaw	36	6	--	3,149	561	131	1	--	559	7,225	11	84	222	299
Osceola	20	1	3	21	1,193	77	--	--	574	6,447	--	240	107	108
Oscoda	6	141	--	3,663	4,407	726	2	--	164	6,155	35	158	6	262
Otsego	86	4	--	1,943	3,093	261	6	--	177	3,465	--	1,024	186	121
Presque Isle	1,764	426	--	1,902	1,384	290	203	1	319	8,820	101	325	122	1,157
Roscommon	11	15	--	3,667	2,904	247	2	--	255	7,952	9	260	106	329
Wexford	11	--	1	1,157	11,779	156	1	--	338	3,231	--	281	198	103
Total	4,538	1,152	147	33,809	69,795	5,692	682	12	11,521	147,825	801	11,551	4,790	8,231
SOUTHERN LOWER PENINSULA														
Allegan	--	--	--	5	228	23	--	--	766	400	--	23	108	--
Barry	--	--	--	9	189	12	3	--	370	335	--	121	78	--
Berrien	--	--	--	9	--	--	--	--	155	41	6	121	66	--
Branch	--	--	--	--	--	--	--	--	464	16	--	113	--	--
Calhoun	--	--	--	--	3	--	--	--	920	126	353	471	61	--
Cass	--	--	--	9	--	--	--	--	262	5	--	197	185	--
Clinton	--	--	--	1	--	--	--	--	178	8	--	27	--	--
Eaton	--	--	--	--	--	--	--	--	723	18	--	204	63	--
Genessee	--	--	--	--	--	--	--	--	188	3	--	80	37	--
Gratiot	--	--	--	--	13	33	--	--	287	233	--	102	11	--
Hillsdale	--	--	--	--	--	--	--	--	170	--	--	62	--	--
Huron	--	--	--	--	27	--	--	3	154	161	12	21	4	58
Ingham	--	--	--	--	--	1	--	--	337	21	1	98	17	--
Ionia	--	--	--	--	--	--	--	--	106	30	--	96	78	--
Jackson	--	--	--	--	--	--	--	--	359	20	--	75	--	--
Kalamazoo	--	--	--	--	7	16	--	--	100	26	--	4	10	--
Kent	--	--	--	--	86	9	--	--	425	145	--	113	25	--
Lapeer	--	3	--	3	27	--	--	3	262	228	11	100	44	31
Lenawee	--	--	--	--	--	--	--	--	171	5	--	103	3	--
Livingston	--	--	--	--	20	--	--	--	67	5	--	10	--	--
Macomb	7	--	--	--	--	--	--	9	45	3	--	32	15	--
Monroe	--	--	--	--	--	--	--	--	31	--	--	31	--	--
Montcalm	--	--	4	--	202	118	--	--	625	1,184	17	72	48	22
Muskegon	--	--	8	2	627	54	--	--	329	1,088	--	43	119	7
Oakland	--	--	--	--	36	1	--	--	221	5	--	14	5	--
Ottawa	30	--	--	1	519	5	--	--	148	84	--	40	143	--
Saginaw	--	--	--	--	--	31	--	--	234	86	--	9	1	47
St. Clair	--	--	7	--	--	87	--	--	481	47	--	115	53	--
St. Joseph	--	--	--	--	--	--	--	--	325	56	--	98	--	--
Sanilac	--	--	--	--	--	--	--	--	181	132	24	46	20	40
Shiawassee	--	--	--	--	--	--	--	--	499	16	--	119	39	--
Tuscola	--	--	--	--	646	44	--	--	309	299	--	144	20	50
Van Buren	--	--	--	--	39	--	--	--	155	24	--	12	37	--
Washtenaw	--	--	--	--	--	--	--	--	177	9	--	63	18	--
Wayne	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	37	3	19	39	2,669	434	3	15	10,224	4,859	424	2,979	1,308	255
State total	21,373	25,692	8,058	61,250	88,748	23,805	22,033	1,078	29,720	236,530	6,686	27,514	23,089	28,878

(Table 21 continued on next page)

(Table 21 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	O. hard-woods	All species
EASTERN UPPER PENINSULA											
Alger	1,206	--	160	--	5,741	2,538	60	--	--	190	21,725
Chippewa	984	--	56	--	6,817	3,042	158	--	--	24	28,325
Delta	1,905	--	443	--	5,478	3,373	301	--	--	235	53,111
Luce	1,094	--	36	--	5,055	2,141	57	--	--	90	21,460
Mackinac	395	--	110	--	2,924	1,438	50	--	--	52	16,575
Menominee	1,047	--	299	--	5,511	2,046	791	4	--	196	38,535
Schoolcraft	1,074	--	172	--	3,984	2,573	41	--	--	113	23,997
Total	7,705	--	1,276	--	35,510	17,151	1,458	4	--	905	203,728
WESTERN UPPER PENINSULA											
Baraga	4,306	--	168	6	21,093	3,624	938	8	--	413	42,893
Dickinson	647	--	166	--	2,676	848	489	--	--	119	28,272
Gogebic	4,211	--	136	--	11,450	2,922	981	2	--	246	32,363
Houghton	1,811	--	130	--	11,130	2,102	1,227	1	--	201	24,417
Iron	2,242	14	141	2	9,889	1,922	760	11	--	271	41,197
Keweenaw	291	--	--	--	2,112	664	845	--	--	21	4,984
Marquette	3,296	--	688	--	15,196	4,671	2,636	--	--	435	62,899
Ontonagon	3,746	--	165	--	13,130	2,115	647	5	--	91	41,953
Total	20,550	14	1,594	8	86,676	18,868	8,523	27	--	1,797	278,978
NORTHERN LOWER PENINSULA											
Alcona	--	--	--	--	253	1,192	2,909	42	--	--	22,323
Alpena	7	--	--	--	87	1,060	1,163	11	--	1	10,342
Antrim	31	--	25	--	930	296	111	--	--	15	3,745
Arenac	2	104	5	--	11	506	378	26	1	2	3,129
Bay	--	75	1	--	--	137	67	37	--	--	576
Benzie	24	--	--	--	1,549	263	201	19	1	121	4,710
Charlevoix	79	--	4	--	1,102	148	97	--	--	34	4,174
Cheboygan	31	--	4	--	1,109	1,561	804	1	--	5	17,504
Clare	--	88	1	4	86	1,498	3,982	690	--	108	15,549
Crawford	1	--	--	--	361	665	3,396	92	--	--	16,741
Emmet	46	--	14	--	1,801	708	212	1	--	31	11,012
Gladwin	1	85	12	2	23	1,839	1,318	251	--	11	10,343
Grand Traverse	8	--	2	--	1,074	587	1,380	192	5	64	11,298
Iosco	--	96	1	--	97	544	846	51	--	--	10,023
Isabella	--	57	12	--	71	441	1,534	313	--	17	6,335
Kalkaska	10	--	1	--	924	763	967	85	--	47	11,441
Lake	22	--	15	--	1,121	1,656	9,410	1,869	--	249	29,191
Leelanau	--	--	--	--	1,138	236	298	--	--	1	3,020
Manistee	21	4	1	--	2,694	1,327	2,959	380	--	326	18,129
Mason	2	--	15	--	672	852	2,343	405	--	88	13,621
Mecosta	4	18	10	1	602	480	2,113	367	--	123	9,431
Midland	3	230	3	8	28	2,158	2,502	670	--	18	11,113
Missaukee	--	--	1	--	603	1,190	1,560	113	--	12	10,811
Montmorency	13	--	--	--	824	1,332	4,796	34	--	--	21,751
Newaygo	15	60	19	126	653	3,061	10,556	2,339	--	349	30,498
Oceana	36	80	2	20	1,215	2,651	3,361	880	--	317	14,561

(Table 21 continued on next page)

(Table 21 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	O. hard-woods	All species
NORTHERN LOWER PENINSULA (continued)											
Ogemaw	--	5	1	--	307	1,617	1,764	122	--	--	16,100
Osceola	23	10	3	1	1,385	792	2,464	204	--	163	13,836
Oscoda	--	--	--	--	204	1,309	4,035	37	--	5	21,315
Otsego	19	--	9	--	1,290	808	471	4	--	9	12,976
Presque Isle	51	--	--	--	589	1,326	1,112	5	--	--	19,897
Roscommon	--	3	--	--	232	1,979	5,881	279	--	4	24,135
Wexford	29	--	7	--	2,203	781	1,500	158	--	174	22,108
Total	478	915	168	162	25,238	35,763	76,490	9,677	7	2,294	451,738
SOUTHERN LOWER PENINSULA											
Allegan	2	20	40	89	106	816	2,730	1,091	--	306	6,753
Barry	5	5	69	186	1,246	1,297	3,278	603	2	222	8,030
Berrien	2	112	142	27	378	236	526	123	--	614	2,558
Branch	--	42	55	94	100	1,085	547	338	61	134	3,049
Calhoun	6	60	124	287	102	1,115	899	585	45	418	5,575
Cass	9	14	165	78	222	467	557	325	163	477	3,135
Clinton	--	34	2	45	34	226	223	54	50	5	887
Eaton	--	3	71	116	385	454	100	123	28	14	2,302
Genessee	--	19	10	12	191	190	232	206	11	14	1,193
Gratiot	--	64	1	--	71	338	851	260	--	9	2,273
Hillsdale	--	9	29	42	361	147	124	84	30	34	1,092
Huron	--	294	5	3	30	366	2	--	--	14	1,154
Ingham	--	103	33	64	180	200	232	227	1	48	1,563
Ionia	--	--	14	3	89	251	351	38	18	20	1,094
Jackson	4	11	19	474	--	444	1,972	711	36	421	4,546
Kalamazoo	2	6	39	95	13	365	679	59	--	295	1,716
Kent	1	10	44	51	592	742	2,809	529	--	89	5,670
Lapeer	6	188	31	69	241	435	478	448	--	15	2,623
Lenawee	--	21	14	194	329	191	124	170	38	37	1,400
Livingston	--	--	2	66	--	134	553	274	--	14	1,145
Macomb	3	26	23	13	60	187	--	19	--	3	445
Monroe	--	35	14	33	48	48	201	83	40	10	574
Montcalm	--	--	101	57	134	1,083	2,565	1,075	--	17	7,324
Muskegon	2	6	14	36	139	1,505	5,277	1,109	14	161	10,540
Oakland	--	1	10	44	53	119	650	240	5	12	1,416
Ottawa	3	31	21	4	129	489	793	161	--	13	2,614
Saginaw	--	228	6	17	87	299	338	541	--	6	1,930
St. Clair	4	173	7	39	134	238	823	956	--	49	3,213
St. Joseph	--	--	47	277	53	497	1,167	208	431	185	3,344
Sanilac	--	370	1	8	63	484	14	5	--	6	1,394
Shiawassee	--	82	4	47	115	338	543	284	14	61	2,161
Tuscola	--	404	11	5	219	794	112	74	2	23	3,156
Van Buren	--	17	91	66	202	389	748	281	14	122	2,197
Washtenaw	--	26	5	149	44	227	528	832	268	71	2,417
Wayne	--	--	--	--	--	--	--	--	--	--	--
Total	49	2,414	1,264	2,790	6,150	16,196	31,026	12,116	1,271	3,939	100,483
State total	28,782	3,343	4,302	2,960	153,574	87,978	117,497	21,824	1,278	8,935	1,034,927

Table 22.-- Logging residues from timberland generated during roundwood production by Forest Survey Unit, county, and species group, Michigan, 1988

(In thousand cubic feet)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar	Basswood	Beech	White birch
EASTERN UPPER PENINSULA														
Alger	48	143	172	148	57	74	86	6	14	118	37	48	259	81
Chippewa	68	156	51	156	45	38	122	6	4	247	24	14	339	59
Delta	668	506	120	705	250	110	460	20	48	725	170	117	191	375
Luce	55	135	39	309	42	66	97	5	3	127	11	7	292	41
Mackinac	53	207	28	52	33	25	134	4	5	363	32	25	70	107
Menominee	329	320	82	148	40	84	213	14	52	1,045	77	100	114	480
Schoolcraft	83	259	87	313	101	90	167	11	10	223	49	47	244	159
Total	1,304	1,726	579	1,831	568	487	1,279	66	136	2,848	400	358	1,509	1,302
WESTERN UPPER PENINSULA														
Baraga	14	35	79	212	36	84	70	1	72	223	--	135	46	116
Dickinson	108	340	102	166	98	141	278	15	18	909	40	51	5	255
Gogebic	2	17	11	111	83	32	78	--	89	405	--	154	10	74
Houghton	28	83	42	130	20	45	63	4	30	175	--	41	23	86
Iron	31	112	32	186	153	173	231	11	51	1,150	5	77	28	253
Keweenaw	21	--	--	3	2	18	4	--	1	15	--	2	4	8
Marquette	137	320	163	627	89	199	260	15	81	1,297	128	153	129	486
Ontonagon	1	14	10	260	67	45	12	--	62	851	10	102	7	42
Total	342	921	439	1,695	548	737	996	46	404	5,025	183	715	252	1,320
NORTHERN LOWER PENINSULA														
Alcona	23	5	--	13	60	14	1	--	32	995	24	16	5	78
Alpena	91	2	--	16	18	5	2	--	14	486	12	4	2	53
Antrim	--	--	--	--	18	1	--	--	14	40	--	43	10	--
Arenac	--	--	--	4	2	--	--	--	14	107	1	--	--	5
Bay	--	--	--	--	--	--	--	--	10	--	--	1	--	2
Benzie	1	--	--	2	45	--	--	--	10	104	--	13	10	2
Charlevoix	18	--	--	4	2	2	--	--	14	29	--	67	13	3
Cheboygan	30	7	--	65	79	28	9	--	16	465	1	58	12	44
Clare	--	--	--	4	9	3	--	--	22	523	--	3	5	16
Crawford	--	--	--	295	161	11	--	--	2	235	--	6	--	16
Emmet	7	--	--	24	89	8	--	--	24	162	--	59	18	7
Gladwin	--	--	--	21	2	2	--	--	16	267	--	--	--	33
Grand Traverse	2	--	--	84	170	5	--	--	11	281	--	25	18	11
Iosco	--	--	--	17	160	8	--	--	19	266	1	2	1	20
Isabella	3	--	--	--	16	2	--	--	19	97	--	6	3	2
Kalkaska	--	--	--	56	203	12	--	--	3	265	--	17	1	5
Lake	--	--	--	116	276	8	--	--	33	572	--	17	9	7
Leelanau	--	--	--	--	--	--	--	--	27	10	--	15	17	--
Manistee	--	--	--	1	272	2	--	--	30	254	1	17	15	7
Mason	--	--	1	--	319	--	--	--	20	196	--	9	12	6
Mecosta	--	--	--	4	33	6	--	--	34	485	--	14	1	4
Midland	--	--	--	--	2	5	--	--	32	272	1	9	4	13
Missaukee	1	--	--	33	124	25	--	--	15	455	--	19	1	16
Montmorency	24	3	--	76	64	10	2	--	11	558	5	31	4	67
Newaygo	--	--	2	4	432	31	--	--	39	227	3	21	11	1
Oceana	--	--	2	--	84	3	--	--	21	205	--	4	50	6

(Table 22 continued on next page)

(Table 22 continued)

Unit and county	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar	Basswood	Beech	White birch
NORHTERN LOWER PENINSULA (continued)														
Ogemaw	3	--	--	253	23	5	--	--	30	475	1	2	11	35
Osceola	1	--	--	2	76	5	--	--	32	554	--	13	9	9
Oscoda	--	--	--	192	252	41	--	--	11	428	5	9	--	28
Otsego	7	--	--	48	190	17	--	--	8	160	--	53	9	6
Presque Isle	154	22	--	55	76	16	10	--	25	606	13	17	8	100
Roscommon	1	1	--	185	162	14	--	--	13	489	1	5	--	20
Wexford	--	--	--	40	756	8	--	--	23	241	--	17	19	12
Total	366	40	5	1,614	4,185	297	24	--	644	10,509	69	592	278	634
SOUTHERN LOWER PENINSULA														
Allegan	--	--	--	--	21	1	--	--	39	26	--	1	5	--
Barry	--	--	--	1	10	1	--	--	20	20	--	6	3	--
Berrien	--	--	--	--	--	--	--	--	8	1	--	6	3	--
Branch	--	--	--	--	--	--	--	--	24	2	--	6	--	--
Calhoun	--	--	--	--	--	--	--	--	47	2	18	24	3	--
Cass	--	--	--	--	--	--	--	--	14	--	--	10	10	--
Clinton	--	--	--	--	--	--	--	--	9	--	--	2	--	--
Eaton	--	--	--	--	--	--	--	--	38	1	--	10	3	--
Genessee	--	--	--	--	--	--	--	--	10	--	--	5	2	--
Gratiot	--	--	--	--	1	2	--	--	15	4	--	6	--	--
Hillsdale	--	--	--	--	--	--	--	--	8	--	--	3	--	--
Huron	--	--	--	--	1	--	--	--	8	8	--	1	--	2
Ingham	--	--	--	--	--	--	--	--	18	1	--	6	--	--
Ionia	--	--	--	--	--	--	--	--	6	1	--	5	3	--
Jackson	--	--	--	--	--	--	--	--	18	1	--	3	--	--
Kalamazoo	--	--	--	--	--	1	--	--	5	--	--	--	--	--
Kent	--	--	--	--	5	--	--	--	22	11	--	6	--	--
Lapeer	--	--	--	--	1	--	--	--	14	12	--	6	3	2
Lenawee	--	--	--	--	--	--	--	--	8	--	--	6	--	--
Livingston	--	--	--	--	1	--	--	--	3	--	--	--	--	--
Macomb	--	--	--	--	--	--	--	1	2	--	--	2	--	--
Monroe	--	--	--	--	--	--	--	--	2	--	--	2	--	--
Montcalm	--	--	--	--	11	7	--	--	31	25	--	4	3	--
Muskegon	--	--	--	--	36	3	--	--	17	66	--	2	6	--
Oakland	--	--	--	--	2	--	--	--	12	--	--	--	--	--
Ottawa	3	--	--	--	30	--	--	--	8	4	--	2	7	--
Saginaw	--	--	--	--	--	1	--	--	12	4	--	--	--	2
St. Clair	--	--	--	--	--	5	--	--	24	4	--	6	3	--
St. Joseph	--	--	--	--	--	--	--	--	16	1	--	6	--	--
Sanilac	--	--	--	--	--	--	--	--	10	7	1	2	--	2
Shiawassee	--	--	--	--	--	--	--	--	26	2	--	6	2	--
Tuscola	--	--	--	--	36	2	--	--	16	16	--	8	--	2
Van Buren	--	--	--	--	3	--	--	--	8	--	--	--	1	--
Washtenaw	--	--	--	--	--	--	--	--	9	--	--	3	--	--
Wayne	--	--	--	--	--	--	--	--	1	--	--	1	--	--
Total	3	--	--	1	158	23	--	1	528	219	19	156	57	10
State total	2,015	2,687	1,023	5,141	5,459	1,544	2,299	113	1,712	18,601	671	1,821	2,096	3,266

(Table 22 continued on next page)

(Table 22 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	O. hard-woods	All species
EASTERN UPPER PENINSULA											
Alger	206	--	24	--	785	236	20	--	--	22	2,584
Chippewa	89	--	9	--	471	177	10	--	--	1	2,086
Delta	328	--	69	--	806	361	41	--	--	30	6,100
Luce	100	--	6	--	436	136	4	--	--	6	1,917
Mackinac	65	--	15	--	229	108	4	--	--	5	1,564
Menominee	203	--	45	--	665	231	56	--	--	26	4,324
Schoolcraft	180	--	27	--	571	199	10	--	--	14	2,844
Total	1,171	--	195	--	3,963	1,448	145	--	--	104	21,419
WESTERN UPPER PENINSULA											
Baraga	369	--	16	--	1,708	309	71	--	--	53	3,649
Dickinson	128	--	24	--	400	124	39	--	--	17	3,258
Gogebic	392	--	20	--	1,292	307	93	--	--	38	3,208
Houghton	185	--	14	--	956	185	78	--	--	26	2,214
Iron	224	--	15	--	967	193	60	--	--	34	3,986
Keweenaw	24	--	--	--	150	39	51	--	--	3	345
Marquette	421	--	72	--	1,548	457	171	--	--	52	6,805
Ontonagon	253	--	11	--	957	158	44	--	--	13	2,919
Total	1,996	--	172	--	7,978	1,772	607	--	--	236	26,384
NORTHERN LOWER PENINSULA											
Alcona	--	--	--	--	18	100	142	5	--	--	1,531
Alpena	--	--	--	--	5	75	58	2	--	--	845
Antrim	2	--	1	--	52	11	4	--	--	--	196
Arenac	--	5	--	--	--	24	12	--	--	--	174
Bay	--	3	--	--	--	8	4	1	--	--	29
Benzie	3	--	--	--	100	20	13	3	--	8	334
Charlevoix	4	--	--	--	67	9	3	--	--	2	237
Cheboygan	2	--	--	--	55	72	31	--	--	--	974
Clare	--	2	--	--	8	84	182	42	--	7	910
Crawford	--	--	--	--	13	30	135	7	--	--	911
Emmet	3	--	--	--	96	24	9	--	--	2	532
Gladwin	--	2	--	--	2	72	49	7	--	--	473
Grand Traverse	2	--	--	--	61	34	59	12	--	3	778
Iosco	--	5	--	--	5	38	24	3	--	--	569
Isabella	--	2	--	--	4	19	58	12	--	--	243
Kalkaska	1	--	--	--	64	42	41	4	--	1	715
Lake	3	--	--	--	65	109	421	118	--	13	1,767
Leelanau	--	--	--	--	69	15	12	--	--	--	165
Manistee	3	--	--	--	161	70	128	22	--	17	1,000
Mason	--	--	--	--	37	45	103	19	--	4	771
Mecosta	--	--	--	--	33	27	86	15	--	7	749
Midland	--	6	--	--	2	73	71	25	--	--	515
Missaukee	--	--	--	--	46	103	80	19	--	--	937
Montmorency	--	--	--	--	29	66	152	1	--	--	1,103
Newaygo	--	3	--	5	35	150	436	97	--	18	1,515
Oceana	4	2	--	--	69	141	139	35	--	16	781

(Table 22 continued on next page)

(Table 22 continued)

Unit and county	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Walnut	O. hard-woods	All species
NORTHERN LOWER PENINSULA (continued)											
Ogemaw	--	--	--	--	17	90	62	4	--	--	1,011
Osceola	2	--	--	--	90	49	107	21	--	9	979
Oscoda	--	--	--	--	12	69	198	5	--	--	1,260
Otsego	--	--	--	--	67	30	18	--	--	--	613
Presque Isle	3	--	--	--	33	98	54	2	--	--	1,292
Roscommon	--	--	--	--	12	66	204	12	--	--	1,185
Wexford	6	--	--	--	152	83	84	34	--	13	1,488
Total	38	30	1	5	1,479	1,946	3,179	527	--	120	26,582
					SOUTHERN LOWER PENINSULA						
Allegan	--	--	--	4	5	38	108	45	--	16	309
Barry	--	--	2	10	68	66	142	29	--	10	388
Berrien	--	6	8	--	21	11	22	5	--	32	123
Branch	--	2	2	5	7	57	24	16	4	7	156
Calhoun	--	3	5	13	5	51	36	21	3	22	253
Cass	--	--	8	3	12	24	25	14	8	24	152
Clinton	--	2	--	3	2	11	9	3	2	--	43
Eaton	--	--	3	5	21	24	4	5	1	--	115
Genessee	--	--	--	--	11	10	9	9	--	--	56
Gratiot	--	3	--	--	5	17	35	9	--	--	97
Hillsdale	--	--	2	3	19	8	5	3	1	2	54
Huron	--	16	--	--	2	19	--	--	--	--	57
Ingham	--	6	2	3	10	10	9	9	--	2	76
Ionia	--	--	--	--	6	13	15	1	--	--	50
Jackson	--	--	--	24	--	23	80	28	1	22	200
Kalamazoo	--	--	2	5	--	18	28	3	--	15	77
Kent	--	--	1	3	32	37	120	23	--	5	265
Lapeer	--	10	2	3	12	22	19	18	--	--	124
Lenawee	--	1	--	9	17	10	5	7	2	2	67
Livingston	--	--	--	3	--	7	23	11	--	--	48
Macomb	--	1	1	--	2	10	--	--	--	--	19
Monroe	--	2	--	2	2	2	8	3	2	--	25
Montcalm	--	--	2	3	7	54	103	41	--	--	291
Muskegon	--	--	--	2	7	76	216	42	--	8	481
Oakland	--	--	--	3	2	6	25	9	--	--	59
Ottawa	--	--	--	--	7	22	32	7	--	--	122
Saginaw	--	11	--	--	5	16	14	21	--	--	86
St. Clair	--	8	--	2	7	13	32	37	--	2	143
St. Joseph	--	--	2	12	2	24	47	10	25	10	155
Sanilac	--	20	--	--	3	24	--	--	--	--	69
Shiawassee	--	5	--	3	6	18	23	12	--	3	106
Tuscola	--	21	--	--	12	41	4	3	--	1	162
Van Buren	--	--	2	3	10	18	30	11	--	6	92
Washtenaw	--	1	--	8	2	11	22	34	14	3	107
Wayne	--	--	--	--	--	1	2	1	--	--	6
Total	--	118	44	134	329	812	1,276	490	63	192	4,633
State total	3,205	148	412	139	13,749	5,978	5,207	1,017	63	652	79,018

Table 23.-- Residue produced at primary wood-using mills by type of material, type of use, and county, Michigan, 1988

In thousand tons, green weight)

EASTERN UPPER PENINSULA

County and type of use	Wood residue						Bark	
	Total		Coarse 1/		Fine 2/			
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Alger								
Fiber products	0.16	22.61	0.16	22.61	--	--	--	--
Industrial fuel	0.11	29.99	0.11	6.90	--	23.09	0.34	14.38
Domestic fuel	--	1.34	--	1.34	--	--	--	0.28
Miscellaneous 3/	0.16	2.01	--	--	0.16	2.01	--	--
Not used	0.11	0.75	0.07	0.72	0.04	0.03	0.03	0.30
Total	0.54	56.70	0.34	31.57	0.20	25.13	0.37	14.96
Chippewa								
Industrial fuel	--	0.08	--	0.08	--	--	--	0.03
Domestic fuel	0.68	2.90	0.68	2.90	--	--	0.21	1.20
Miscellaneous 3/	0.63	0.19	--	--	0.63	0.19	--	--
Not used	1.72	3.26	1.23	1.09	0.49	2.17	0.42	0.43
Total	3.03	6.43	1.91	4.07	1.12	2.36	0.63	1.66
Delta								
Fiber products	9.00	10.74	8.51	8.45	0.49	2.29	--	1.48
Industrial fuel	6.76	1.36	0.16	0.01	6.60	1.35	3.58	2.34
Domestic fuel	4.40	0.41	4.40	0.41	--	--	0.07	--
Miscellaneous 3/	0.75	1.93	0.05	--	0.70	1.93	2.41	--
Not used	0.60	--	0.48	--	0.12	--	0.56	--
Total	21.51	14.44	13.60	8.87	7.91	5.57	6.62	3.82
Luce								
Fiber products	--	28.59	--	28.59	--	--	--	--
Industrial fuel	2.98	7.82	2.89	--	0.09	7.82	1.23	4.61
Domestic fuel	0.02	0.06	0.02	0.06	--	--	0.01	0.02
Miscellaneous 3/	1.68	7.58	--	--	1.68	7.58	--	3.19
Not used	0.40	3.01	0.31	1.09	0.09	1.92	0.13	3.07
Total	5.08	47.06	3.22	29.74	1.86	17.32	1.37	10.89
Mackinac								
Fiber products	--	3.79	--	3.79	--	--	--	--
Industrial fuel	--	2.21	--	--	--	2.21	--	1.57
Domestic fuel	0.06	1.61	0.06	1.61	--	--	0.06	0.68
Miscellaneous 3/	0.03	0.94	--	--	0.03	0.94	--	--
Not used	0.33	0.01	0.20	0.01	0.13	--	0.09	--
Total	0.42	8.56	0.26	5.41	0.16	3.15	0.15	2.25
Menominee								
Fiber products	21.95	31.84	14.49	24.99	7.46	6.85	--	4.62
Industrial fuel	2.25	13.26	0.29	5.41	1.96	7.85	7.23	8.61
Domestic fuel	0.33	2.95	0.33	1.06	--	1.89	0.30	0.48
Miscellaneous 3/	3.29	3.84	2.10	0.87	1.19	2.97	1.56	--
Not used	1.90	3.75	1.57	2.86	0.33	0.89	0.28	1.21
Total	29.72	55.64	18.78	35.19	10.94	20.45	9.37	14.92

(Table 23 continued on next page)

(Table 23 continued)

County and type of use	Wood residue						Bark	
	Total		Coarse 1/		Fine 2/			
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Schoolcraft								
Fiber products	1.89	1.99	1.89	1.99	--	--	--	--
Industrial fuel	0.32	0.21	0.20	0.13	0.12	0.08	0.89	0.87
Miscellaneous 3/	1.10	1.16	--	--	1.10	1.16	--	--
Total	3.31	3.36	2.09	2.12	1.22	1.24	0.89	0.87
All counties								
Fiber products	33.00	99.56	25.05	90.42	7.95	9.14	--	6.10
Industrial fuel	12.42	54.93	3.65	12.53	8.77	42.40	13.27	32.41
Domestic fuel	5.49	9.27	5.49	7.38	--	1.89	0.65	2.66
Miscellaneous 3/	7.64	17.65	2.15	0.87	5.49	16.78	3.97	3.19
Not used	5.06	10.78	3.86	5.77	1.20	5.01	1.51	5.01
Total	63.61	192.19	40.20	116.97	23.41	75.22	19.40	49.37
WESTERN UPPER PENINSULA								
Baraga								
Fiber products	--	24.60	--	24.60	--	--	--	--
Industrial fuel	0.38	13.83	0.24	8.74	0.14	5.09	0.10	14.19
Miscellaneous 3/	--	14.32	--	--	--	14.32	--	--
Total	0.38	52.75	0.24	33.34	0.14	19.41	0.10	14.19
Dickinson								
Fiber products	4.90	24.63	4.23	21.94	0.67	2.69	--	--
Industrial fuel	1.51	8.35	0.11	0.02	1.40	8.33	1.83	9.22
Miscellaneous 3/	0.45	1.77	--	--	0.45	1.77	--	--
Total	6.86	34.75	4.34	21.96	2.52	12.79	1.83	9.22
Gogebic								
Fiber products	--	37.18	--	32.76	--	4.42	--	--
Industrial fuel	8.24	24.58	0.22	1.75	8.02	22.83	3.67	23.23
Domestic fuel	0.16	0.31	0.16	0.31	--	--	0.05	0.13
Miscellaneous 3/	4.94	23.32	4.92	11.69	0.02	11.63	--	--
Not used	0.07	0.14	--	--	0.07	0.14	--	--
Total	13.41	85.53	5.30	46.51	8.11	39.02	3.72	23.36
Houghton								
Fiber products	0.35	24.33	0.35	24.33	--	--	--	--
Industrial fuel	1.28	18.52	0.70	3.60	0.58	14.92	0.35	11.73
Miscellaneous 3/	0.07	2.08	--	--	0.07	2.08	0.01	0.07
Not used	0.09	1.53	0.08	1.43	0.01	0.10	0.04	0.68
Total	1.79	46.46	1.13	29.36	0.66	17.10	0.40	12.48
Iron								
Fiber products	--	7.58	--	5.87	--	1.71	--	--
Industrial fuel	--	2.10	--	0.18	--	1.92	--	2.57
Domestic fuel	0.43	0.06	0.43	0.06	--	--	0.15	0.02
Miscellaneous 3/	0.94	--	0.58	--	0.36	--	0.24	--
Not used	0.22	0.21	--	0.18	0.22	0.03	0.04	0.08
Total	1.59	9.95	1.01	6.29	0.58	3.66	0.43	2.67

(Table 23 continued on next page)

(Table 23 continued)

County and type of use	Wood residue						Bark	
	Total		Coarse 1/		Fine 2/			
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Keweenaw								
Industrial fuel	0.04	0.14	--	--	0.04	0.14	--	--
Domestic fuel	0.14	0.47	0.14	0.47	--	--	0.06	0.20
Miscellaneous 3/	0.04	0.14	--	--	0.04	0.14	--	--
Not used	--	--	--	--	--	--	0.03	--
Total	0.22	0.75	0.14	0.47	0.08	0.28	0.09	0.20
Marquette								
Fiber products	0.95	--	0.60	--	0.35	--	0.17	--
Domestic fuel	0.14	0.51	0.14	0.51	--	--	0.04	0.21
Miscellaneous 3/	0.67	0.30	--	--	0.67	0.30	--	--
Not used	1.01	--	1.01	--	--	--	0.43	--
Total	2.77	0.81	1.75	0.51	1.02	0.30	0.64	0.21
All counties								
Fiber products	6.20	118.32	5.18	109.50	1.02	8.82	0.17	--
Industrial fuel	11.45	67.52	1.27	14.29	10.18	53.23	5.95	60.94
Domestic fuel	0.87	1.35	0.87	1.35	--	--	0.30	0.56
Miscellaneous 3/	7.11	41.93	5.50	11.69	1.61	30.24	0.25	0.07
Not used	1.39	1.88	1.09	1.61	0.30	0.27	0.54	0.76
Total	27.02	231.00	13.91	138.44	13.11	92.56	7.21	62.33
NORTHERN LOWER PENINSULA								
Alcona								
Fiber products	0.35	6.45	0.35	6.45	--	--	--	--
Industrial fuel	0.11	2.65	0.07	1.67	0.04	0.98	0.03	0.71
Domestic fuel	0.27	1.16	0.27	1.16	--	--	0.12	0.21
Miscellaneous 3/	0.12	0.67	--	--	0.12	0.67	0.13	3.04
Not used	0.93	8.29	0.44	2.88	0.49	5.41	0.18	1.22
Total	1.78	19.22	1.13	12.16	0.65	7.06	0.46	5.18
Alpena								
Fiber products	--	3.53	--	3.53	--	--	--	--
Industrial fuel	--	1.53	--	0.39	--	1.14	--	--
Domestic fuel	0.52	1.37	0.52	0.90	--	0.47	--	0.38
Miscellaneous 3/	4.04	0.63	2.09	--	1.95	0.63	1.01	1.66
Not used	0.84	3.72	0.80	2.00	0.04	1.72	0.27	0.84
Total	5.40	10.78	3.41	6.82	1.99	3.96	1.28	2.88
Antrim								
Fiber products	0.01	0.99	0.01	0.99	--	--	--	--
Industrial fuel	0.06	3.50	0.06	3.50	--	--	--	--
Domestic fuel	0.02	1.00	0.02	1.00	--	--	--	--
Miscellaneous 3/	0.05	3.20	--	--	0.05	3.20	0.03	2.29
Not used	--	--	--	--	--	--	--	--
Total	0.14	8.69	0.09	5.49	0.05	3.20	0.03	2.29

(Table 23 continued on next page)

(Table 23 continued)

County and type of use	Wood residue						Bark	
	Total		Coarse 1/		Fine 2/			
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Arenac								
Fiber products	--	14.79	--	14.79	--	--	--	--
Industrial fuel	--	0.26	--	0.26	--	--	--	0.11
Domestic fuel	0.02	0.90	0.02	0.90	--	--	0.01	0.38
Miscellaneous 3/	0.01	9.20	--	--	0.01	9.20	0.06	6.29
Not used	--	0.08	--	--	--	0.08	--	--
Total	0.03	25.23	0.02	15.95	0.01	9.28	0.07	6.78
Bay								
Domestic fuel	0.03	0.35	0.02	0.35	0.01	--	0.01	0.15
Miscellaneous 3/	--	0.20	--	--	--	0.20	--	--
Not used	0.03	0.55	0.02	0.35	0.01	0.20	0.01	0.15
Total	0.06	1.10	0.04	0.70	0.02	0.40	0.02	0.30
Benzie								
Industrial fuel	--	0.11	--	0.11	--	--	--	0.05
Domestic fuel	0.02	0.33	0.02	0.33	--	--	0.01	0.15
Miscellaneous 3/	0.01	0.25	--	--	0.01	0.25	--	--
Not used	--	0.01	--	--	--	0.01	--	--
Total	0.03	0.70	0.02	0.44	0.01	0.26	0.01	0.20
Charlevoix								
Fiber products	--	3.43	--	3.43	--	--	--	--
Industrial fuel	0.54	0.72	0.34	0.72	0.20	--	0.16	0.31
Domestic fuel	--	0.90	--	0.90	--	--	--	0.31
Miscellaneous 3/	0.79	2.92	0.50	--	0.29	2.92	0.24	1.47
Not used	--	1.68	--	1.05	--	0.63	--	0.44
Total	1.33	9.65	0.84	6.10	0.49	3.55	0.40	2.53
Cheboygan								
Fiber products	1.57	15.19	1.57	15.19	--	--	--	--
Industrial fuel	0.58	7.51	0.03	0.10	0.55	7.41	0.01	0.01
Domestic fuel	0.29	0.01	0.29	0.01	--	--	0.10	0.05
Miscellaneous 3/	0.02	1.25	--	--	0.02	1.25	0.67	6.39
Not used	0.65	5.63	0.07	3.39	0.58	2.24	0.03	1.42
Total	3.11	29.59	1.96	18.69	1.15	10.90	0.81	7.87
Clare								
Fiber products	--	4.36	--	4.36	--	--	--	--
Domestic fuel	--	0.01	--	0.01	--	--	--	--
Miscellaneous 3/	--	2.54	--	--	--	2.54	--	1.85
Not used	--	0.01	--	--	--	0.01	--	--
Total	--	6.92	--	4.37	--	2.55	--	1.85
Crawford								
Fiber products	1.44	9.68	0.91	6.12	0.53	3.56	0.39	2.60
Industrial fuel	4.30	29.06	2.72	18.37	1.58	10.69	1.16	7.81
Domestic fuel	0.14	0.33	0.12	0.24	0.02	0.09	0.05	0.10
Miscellaneous 3/	0.01	0.01	--	--	0.01	0.01	--	--
Not used	0.23	0.06	0.12	0.01	0.11	0.05	0.05	--
Total	6.12	39.14	3.87	24.74	2.25	14.40	1.65	10.51

(Table 23 continued)

County and type of use	Wood residue						Bark	
	Total		Coarse 1/		Fine 2/			
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Emmet								
Fiber products	--	2.11	--	--	--	2.11	--	--
Industrial fuel	--	1.69	--	--	--	1.69	--	--
Domestic fuel	0.08	5.92	0.08	5.92	--	--	0.03	3.26
Miscellaneous 3/	0.04	2.33	--	--	0.04	2.33	--	--
Total	0.12	12.05	0.08	5.92	0.04	6.13	0.03	3.26
Gladwin								
Domestic fuel	--	0.07	--	0.07	--	--	--	0.03
Miscellaneous 3/	--	0.22	--	--	--	0.22	--	--
Not used	--	0.37	--	0.35	--	0.02	--	0.15
Total	--	0.66	--	0.42	--	0.24	--	0.18
Grand Traverse								
Industrial fuel	0.01	0.02	0.01	0.02	--	--	--	0.01
Domestic fuel	0.14	0.59	0.14	0.59	--	--	0.03	0.25
Miscellaneous 3/	0.09	0.37	--	--	0.09	0.37	0.03	0.01
Not used	0.01	0.02	0.01	0.02	--	--	0.03	0.01
Total	0.25	1.00	0.16	0.63	0.09	0.37	0.09	0.28
Iosco								
Fiber products	--	4.25	--	4.25	--	--	--	--
Domestic fuel	0.20	1.11	0.20	1.11	--	--	0.12	0.47
Miscellaneous 3/	0.08	3.12	--	--	0.08	3.12	--	1.81
Not used	0.15	0.63	0.07	0.40	0.08	0.23	--	0.17
Total	0.43	9.11	0.27	5.76	0.16	3.35	0.12	2.45
Isabella								
Fiber products	--	18.01	--	18.01	--	--	--	--
Industrial fuel	0.84	--	0.84	--	--	--	--	--
Domestic fuel	0.09	0.05	0.09	0.05	--	--	0.03	0.02
Miscellaneous 3/	0.53	11.14	--	0.39	0.53	10.75	0.36	7.80
Total	1.46	29.20	0.93	18.45	0.53	10.75	0.39	7.82
Kalkaska								
Domestic fuel	0.02	0.09	0.02	0.09	--	--	0.01	0.04
Miscellaneous 3/	0.01	0.01	--	--	0.01	0.01	0.04	--
Not used	0.11	0.04	0.07	--	0.04	0.04	0.03	--
Total	0.14	0.14	0.09	0.09	0.05	0.05	0.08	0.04
Lake								
Fiber products	0.16	9.13	0.16	9.13	--	--	--	--
Industrial fuel	2.55	2.47	1.61	--	0.94	2.47	0.68	--
Domestic fuel	--	0.35	--	0.35	--	--	--	--
Miscellaneous 3/	0.07	2.33	--	--	0.07	2.33	0.07	5.55
Not used	0.02	0.71	--	--	0.02	0.71	--	0.15
Total	2.80	14.99	1.77	9.48	1.03	5.51	0.75	5.70

(Table 23 continued on next page)

(Table 23 continued)

County and type of use	Wood residue						Bark	
	Total		Coarse 1/		Fine 2/			
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Leelanau								
Domestic fuel	--	0.18	--	0.18	--	--	--	0.08
Miscellaneous 3/	--	6.28	--	3.57	--	2.71	--	1.42
Not used	--	1.46	--	1.25	--	0.21	--	0.51
Total	--	7.92	--	5.00	--	2.92	--	2.01
Manistee								
Fiber products	0.20	2.91	0.20	2.91	--	--	--	--
Miscellaneous 3/	0.01	0.87	--	--	0.01	0.87	0.09	1.23
Not used	0.11	0.82	--	--	0.11	0.82	--	--
Total	0.32	4.60	0.20	2.91	0.12	1.69	0.09	1.23
Mason								
Fiber products	--	1.77	--	1.77	--	--	--	--
Industrial fuel	--	0.37	--	0.37	--	--	--	0.16
Domestic fuel	0.06	1.92	0.06	1.92	--	--	--	0.63
Miscellaneous 3/	4.54	13.19	2.77	6.84	1.77	6.35	1.30	3.84
Not used	0.22	--	0.22	--	--	--	--	--
Total	4.82	17.25	3.05	10.90	1.77	6.35	1.30	4.63
Mecosta								
Domestic fuel	0.01	2.68	0.01	2.68	--	--	0.01	0.01
Miscellaneous 3/	--	1.56	--	--	--	1.56	--	1.14
Not used	0.01	0.01	--	--	0.01	0.01	--	--
Total	0.02	4.25	0.01	2.68	0.01	1.57	0.01	1.15
Midland								
Industrial fuel	--	2.59	--	2.59	--	--	--	--
Domestic fuel	0.14	5.40	0.14	5.40	--	--	0.07	0.09
Miscellaneous 3/	0.09	4.66	--	--	0.09	4.66	--	3.30
Total	0.23	12.65	0.14	7.99	0.09	4.66	0.07	3.39
Missaukee								
Fiber products	46.57	8.32	46.57	8.32	--	--	--	--
Industrial fuel	14.27	--	8.26	--	6.01	--	--	--
Domestic fuel	0.76	0.22	0.76	0.22	--	--	0.11	0.04
Miscellaneous 3/	26.35	4.97	--	--	26.35	4.97	23.32	3.51
Not used	--	--	--	--	--	--	0.21	0.05
Total	87.95	13.51	55.59	8.54	32.36	4.97	23.64	3.60
Montmorency								
Fiber products	--	5.15	--	5.15	--	--	--	--
Industrial fuel	0.38	4.50	0.24	1.83	0.14	2.67	0.10	0.78
Domestic fuel	0.05	0.45	0.05	0.45	--	--	0.03	0.19
Miscellaneous 3/	0.02	2.26	--	--	0.02	2.26	--	2.17
Not used	0.39	7.33	0.24	5.02	0.15	2.31	0.08	2.12
Total	0.84	19.69	0.53	12.45	0.31	7.24	0.21	5.26

(Table 23 continued on next page)

(Table 23 continued)

County and type of use	Wood residue						Bark	
	Total		Coarse 1/		Fine 2/			
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Newaygo								
Fiber products	--	7.59	--	7.59	--	--	--	--
Industrial fuel	3.35	0.13	3.35	--	--	0.13	1.43	--
Domestic fuel	0.35	5.83	0.35	5.83	--	--	0.14	2.42
Miscellaneous 3/	0.21	7.60	--	0.04	0.21	7.56	--	3.24
Not used	2.68	5.95	0.46	3.68	2.22	2.27	0.20	1.62
Total	6.59	27.10	4.16	17.14	2.43	9.96	1.77	7.28
Oceana								
Domestic fuel	0.09	5.66	0.09	5.66	--	--	0.01	1.05
Miscellaneous 3/	0.12	6.28	--	--	0.12	6.28	0.05	2.47
Not used	0.15	3.67	0.14	3.63	0.01	0.04	0.04	0.55
Total	0.36	15.61	0.23	9.29	0.13	6.32	0.10	4.07
Ogemaw								
Fiber products	0.19	11.98	0.19	11.98	--	--	0.02	2.15
Industrial fuel	2.85	--	1.80	--	1.05	--	--	--
Domestic fuel	0.62	4.75	0.62	4.75	--	--	0.26	1.87
Miscellaneous 3/	1.54	15.67	--	--	1.54	15.67	0.83	2.89
Not used	1.84	10.21	1.84	10.21	--	--	0.77	4.47
Total	7.04	42.61	4.45	26.94	2.59	15.67	1.88	11.38
Osceola								
Fiber products	--	17.02	--	17.02	--	--	--	--
Industrial fuel	--	3.44	--	--	--	3.44	--	--
Domestic fuel	--	0.07	--	0.07	--	--	--	0.03
Miscellaneous 3/	--	6.51	--	--	--	6.51	0.36	7.24
Total	--	27.04	--	17.09	--	9.95	0.36	7.27
Oscoda								
Fiber products	5.36	0.43	5.36	0.43	--	--	--	--
Industrial fuel	28.92	17.10	16.15	10.65	12.77	6.45	6.87	4.54
Domestic fuel	1.28	0.29	1.28	0.29	--	--	0.54	0.12
Miscellaneous 3/	0.51	0.21	--	--	0.51	0.21	2.36	0.18
Not used	0.16	0.07	0.11	0.07	0.05	--	0.04	0.03
Total	36.23	18.10	22.90	11.44	13.33	6.66	9.81	4.87
Otsego								
Fiber products	--	2.72	--	2.72	--	--	--	1.14
Industrial fuel	--	1.58	--	--	--	1.58	--	--
Domestic fuel	0.21	3.14	0.21	3.14	--	--	0.09	1.31
Miscellaneous 3/	0.01	1.48	--	--	0.01	1.48	--	--
Not used	0.65	1.39	0.34	0.66	0.31	0.73	0.15	0.28
Total	0.87	10.31	0.55	6.52	0.32	3.79	0.24	2.73

(Table 23 continued on next page)

(Table 23 continued)

County and type of use	Wood residue						Bark	
	Total		Coarse 1/		Fine 2/			
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Presque Isle								
Fiber products	2.68	2.68	2.68	2.68	--	--	--	--
Industrial fuel	2.59	10.23	1.14	5.48	1.45	4.75	0.21	1.65
Domestic fuel	0.90	1.74	0.79	1.54	0.11	0.20	0.32	0.66
Miscellaneous 3/	0.97	2.44	--	1.46	0.97	0.98	1.54	2.39
Not used	0.17	2.20	0.01	1.04	0.16	1.16	0.01	0.44
Total	7.31	19.29	4.62	12.20	2.69	7.09	2.08	5.14
Roscommon								
Fiber products	2.35	0.26	2.35	0.26	--	--	--	--
Industrial fuel	0.04	0.04	--	--	0.04	0.04	--	--
Domestic fuel	0.10	0.11	0.10	0.11	--	--	0.04	0.03
Miscellaneous 3/	1.49	0.27	--	--	1.49	0.27	1.00	0.11
Not used	0.18	0.16	0.18	0.16	--	--	0.07	0.08
Total	4.16	0.84	2.63	0.53	1.53	0.31	1.11	0.22
Wexford								
Fiber products	1.88	7.96	1.88	7.96	--	--	0.80	--
Domestic fuel	--	1.11	--	1.11	--	--	--	0.47
Miscellaneous 3/	1.09	5.28	--	--	1.09	5.28	--	3.33
Total	2.97	14.35	1.88	9.07	1.09	5.28	0.80	3.80
All counties								
Fiber products	62.76	160.71	62.23	155.04	0.53	5.67	1.21	5.89
Industrial fuel	61.39	89.50	36.62	46.06	24.77	43.44	10.65	16.14
Domestic fuel	6.41	48.09	6.27	47.33	0.14	0.76	2.14	14.80
Miscellaneous 3/	42.82	119.92	5.36	12.30	37.46	107.62	33.49	76.62
Not used	9.53	55.07	5.14	36.17	4.39	18.90	2.17	14.70
Total	182.91	473.29	115.62	296.90	67.29	176.39	49.66	128.15
SOUTHERN LOWER PENINSULA								
Allegan								
Fiber products	--	5.31	--	3.36	--	1.95	--	1.41
Domestic fuel	--	0.12	--	0.12	--	--	--	0.05
Miscellaneous 3/	--	0.09	--	--	--	0.09	0.34	--
Not used	--	0.03	--	0.03	--	--	--	0.01
Total	--	5.55	--	3.51	--	2.04	0.34	1.47
Barry								
Fiber products	--	2.95	--	2.95	--	--	--	--
Industrial fuel	0.02	7.38	--	--	0.02	7.38	--	0.54
Domestic fuel	0.04	0.19	0.04	0.19	--	--	--	0.07
Miscellaneous 3/	0.64	1.98	0.39	--	0.25	1.98	0.18	1.25
Not used	0.04	13.05	0.04	13.00	--	0.05	0.01	4.94
Total	0.74	25.55	0.47	16.14	0.27	9.41	0.19	6.80

(Table 23 continued on next page)

(Table 23 continued)

County and type of use	Wood residue						Bark	
	Total		Coarse 1/		Fine 2/			
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Berrien								
Domestic fuel	--	0.39	--	0.35	--	0.04	--	0.14
Miscellaneous 3/	--	0.16	--	--	--	0.16	--	--
Not used	--	0.37	--	0.14	--	0.23	--	0.10
Total	--	0.92	--	0.49	--	0.43	--	0.24
Branch								
Industrial fuel	0.08	7.28	0.03	2.43	0.05	4.85	0.02	2.21
Miscellaneous 3/	0.01	0.61	0.01	0.60	--	0.01	--	--
Total	0.09	7.89	0.04	3.03	0.05	4.86	0.02	2.21
Calhoun								
Domestic fuel	0.04	1.18	0.04	1.18	--	--	0.02	0.50
Miscellaneous 3/	0.02	0.69	--	--	0.02	0.69	--	--
Total	0.06	1.87	0.04	1.18	0.02	0.69	0.02	0.50
Cass								
Fiber products	--	1.04	--	1.04	--	--	--	--
Domestic fuel	--	0.35	--	0.35	--	--	--	0.15
Miscellaneous 3/	--	0.81	--	--	--	0.81	--	0.44
Total	--	2.20	--	1.39	--	0.81	--	0.59
Clinton								
Fiber products	0.34	10.39	0.34	10.39	--	--	--	--
Domestic fuel	--	0.01	--	0.01	--	--	--	--
Miscellaneous 3/	0.20	6.05	--	--	0.20	6.05	0.15	4.38
Total	0.54	16.45	0.34	10.40	0.20	6.05	0.15	4.38
Eaton								
Fiber products	--	7.56	--	7.56	--	--	--	--
Industrial fuel	--	2.68	--	0.94	--	1.74	--	0.13
Domestic fuel	--	0.46	--	0.46	--	--	--	--
Miscellaneous 3/	--	0.90	--	--	--	0.90	--	4.07
Not used	--	4.05	--	0.93	--	3.12	--	--
Total	--	15.65	--	9.89	--	5.76	--	4.20
Genesee								
Domestic fuel	--	0.31	--	0.21	--	0.10	--	0.09
Miscellaneous 3/	--	0.02	--	--	--	0.02	--	--
Total	--	0.33	--	0.21	--	0.12	--	0.09
Gratiot								
Domestic fuel	--	3.03	--	3.03	--	--	--	1.29
Miscellaneous 3/	--	1.76	--	--	--	1.76	--	--
Total	--	4.79	--	3.03	--	1.76	--	1.29
Hillsdale								
Fiber products	--	4.69	--	4.69	--	--	--	--
Domestic fuel	--	0.36	--	0.36	--	--	--	0.15
Miscellaneous 3/	--	2.92	--	--	--	2.92	--	2.00
Not used	--	0.59	--	0.36	--	0.23	--	0.15
Total	--	8.56	--	5.41	--	3.15	--	2.30

(Table 23 continued on next page)

(Table 23 continued)

County and type of use	Wood residue						Bark	
	Total		Coarse 1/		Fine 2/			
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Huron								
Domestic fuel	--	0.16	--	0.16	--	--	--	0.08
Miscellaneous 3/	--	0.10	--	--	--	0.10	--	--
Total	--	0.26	--	0.16	--	0.10	--	0.08
Ingham								
Fiber products	--	0.67	--	0.67	--	--	--	--
Domestic fuel	--	0.01	--	0.01	--	--	--	0.01
Miscellaneous 3/	--	0.39	--	--	--	0.39	--	0.29
Not used	--	0.01	--	--	--	0.01	--	--
Total	--	1.08	--	0.68	--	0.40	--	0.30
Ionia								
Fiber products	--	7.55	--	7.55	--	--	--	--
Domestic fuel	--	3.90	--	3.90	--	--	--	0.09
Miscellaneous 3/	--	7.71	--	--	--	7.71	--	4.75
Not used	--	1.81	--	1.81	--	--	--	0.77
Total	--	20.97	--	13.26	--	7.71	--	5.61
Kent								
Fiber products	0.09	10.80	0.09	10.80	--	--	--	--
Industrial fuel	1.66	0.22	1.05	0.14	0.61	0.08	0.44	0.06
Miscellaneous 3/	0.66	6.80	--	0.07	0.66	6.73	0.04	4.57
Not used	1.05	0.81	1.05	0.77	--	0.04	0.44	0.32
Total	3.46	18.63	2.19	11.78	1.27	6.85	0.92	4.95
Lapeer								
Domestic fuel	--	0.46	--	0.46	--	--	--	0.20
Miscellaneous 3/	--	0.26	--	--	--	0.26	--	--
Total	--	0.72	--	0.46	--	0.26	--	0.20
Lenawee								
Miscellaneous 3/	--	28.13	--	17.78	--	10.35	--	7.56
Total	--	28.13	--	17.78	--	10.35	--	7.56
Livingston								
Domestic fuel	0.03	--	0.03	--	--	--	0.01	--
Miscellaneous 3/	0.02	0.37	--	0.23	0.02	0.14	--	0.10
Not used	0.01	--	0.01	--	--	--	--	--
Total	0.06	0.37	0.04	0.23	0.02	0.14	0.01	0.10
Montcalm								
Fiber products	--	1.88	--	1.88	--	--	--	--
Domestic fuel	0.33	5.95	0.33	5.95	--	--	0.13	1.67
Miscellaneous 3/	0.19	4.55	--	--	0.19	4.55	--	1.65
Total	0.52	12.38	0.33	7.83	0.19	4.55	0.13	3.32

(Table 23 continued on next page)

(Table 23 continued)

County and type of use	Wood residue						Bark	
	Total		Coarse 1/		Fine 2/			
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Muskegon								
Fiber products	--	1.34	--	1.34	--	--	--	--
Domestic fuel	--	0.13	--	0.13	--	--	--	0.06
Miscellaneous 3/	--	0.93	--	--	--	0.93	--	0.56
Not used	--	0.39	--	0.29	--	0.10	--	0.12
Total	--	2.79	--	1.76	--	1.03	--	0.74
Oakland								
Domestic fuel	--	0.68	--	0.68	--	--	--	0.29
Miscellaneous 3/	--	0.67	--	--	--	0.67	--	--
Not used	--	0.46	--	0.46	--	--	--	0.20
Total	--	1.81	--	1.14	--	0.67	--	0.49
Ottawa								
Fiber products	--	4.81	--	4.81	--	--	--	--
Industrial fuel	--	1.40	--	--	--	1.40	--	--
Domestic fuel	0.03	0.84	0.03	0.84	--	--	--	0.36
Miscellaneous 3/	0.02	1.40	0.02	--	--	1.40	--	2.03
Not used	0.07	4.46	0.02	2.51	0.05	1.95	0.02	1.07
Total	0.12	12.91	0.07	8.16	0.05	4.75	0.02	3.46
Saginaw								
Fiber products	--	5.36	--	5.36	--	--	--	--
Domestic fuel	0.03	6.28	0.03	5.69	--	0.59	--	0.87
Miscellaneous 3/	0.02	5.27	--	--	0.02	5.27	--	3.80
Not used	0.01	0.60	0.01	0.01	--	0.59	0.01	0.01
Total	0.06	17.51	0.04	11.06	0.02	6.45	0.01	4.68
St. Clair								
Domestic fuel	0.21	3.89	0.21	3.89	--	--	0.08	1.65
Miscellaneous 3/	0.12	2.98	--	--	0.12	2.98	--	--
Not used	--	1.27	--	1.25	--	0.02	--	0.53
Total	0.33	8.14	0.21	5.14	0.12	3.00	0.08	2.18
St. Joseph								
Fiber products	--	1.85	--	1.85	--	--	--	--
Domestic fuel	--	0.12	--	0.12	--	--	--	0.05
Miscellaneous 3/	--	1.19	--	--	--	1.19	--	0.79
Not used	--	0.07	--	0.07	--	--	--	0.03
Total	--	3.23	--	2.04	--	1.19	--	0.87
Sanilac								
Industrial fuel	0.02	1.52	0.02	1.52	--	--	0.01	0.64
Miscellaneous 3/	0.03	2.03	0.01	0.61	0.02	1.42	--	0.26
Not used	0.01	1.26	0.01	0.91	--	0.35	--	0.39
Total	0.06	4.81	0.04	3.04	0.02	1.77	0.01	1.29
Shiawassee								
Domestic fuel	--	0.12	--	0.12	--	--	--	0.03
Not used	--	0.07	--	--	--	0.07	--	0.02
Total	--	0.19	--	0.12	--	0.07	--	0.05

(Table 23 continued on next page)

(Table 23 continued)

County and type of use	Wood residue							
	Total		Coarse 1/		Fine 2/		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Tuscola								
Domestic fuel	0.01	0.61	0.01	0.60	--	0.01	--	0.26
Miscellaneous 3/	0.01	7.18	--	4.18	0.01	3.00	--	1.94
Not used	0.01	0.41	0.01	0.40	--	0.01	--	0.01
Total	0.03	8.20	0.02	5.18	0.01	3.02	--	2.21
Van Buren								
Industrial fuel	--	0.60	--	0.23	--	0.37	--	0.17
Domestic fuel	--	0.60	--	0.60	--	--	--	0.26
Miscellaneous 3/	--	2.68	--	1.47	--	1.21	--	0.63
Total	--	3.88	--	2.30	--	1.58	--	1.06
Washtenaw								
Domestic fuel	--	0.27	--	0.27	--	--	--	0.11
Miscellaneous 3/	--	0.16	--	--	--	0.16	--	--
Total	--	0.43	--	0.27	--	0.16	--	0.11
All counties								
Fiber products	0.43	66.20	0.43	64.25	--	1.95	--	1.41
Industrial fuel	1.78	21.08	1.10	5.26	0.68	15.82	0.47	3.75
Domestic fuel	0.72	30.42	0.72	29.68	--	0.74	0.24	8.43
Miscellaneous 3/	1.94	88.79	0.43	24.94	1.51	63.85	0.71	41.07
Not used	1.20	29.71	1.15	22.94	0.05	6.77	0.48	8.67
Total	6.07	236.20	3.83	147.07	2.24	89.13	1.90	63.33
STATE TOTAL								
All counties								
Fiber products	102.39	444.79	92.89	419.21	9.50	25.58	1.38	13.40
Industrial fuel	87.04	233.03	42.64	78.14	44.40	154.89	30.34	113.24
Domestic fuel	13.49	89.13	13.35	85.74	0.14	3.39	3.33	26.45
Miscellaneous 3/	59.51	268.29	13.44	49.80	46.07	218.49	38.42	120.95
Not used	17.18	97.44	11.24	66.49	5.94	30.95	4.70	29.14
Total	279.61	1,132.68	173.56	699.38	106.05	433.30	78.17	303.18

1/ Suitable for chipping such as slabs,edgings,veneer cores,etc.
2/ Not suitable for chipping such as sawdust,veneer clippings,etc.
3/ Livestock bedding, mulch, small dimension, and specialty items.

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Smith, W. Brad; Weatherspoon, Anthony K.; Pilon, John.
1990. **Michigan timber industry—an assessment of timber product output and use, 1988**. Resour. Bull. NC-121. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 67 p.

Discusses recent Michigan forest industry trends; production and receipts of pulpwood, saw logs, and veneer logs; and production of other timber products in 1988. Reports on logging residue, on wood and bark residue generated at primary wood-using mills, and on disposition of this mill residue.

KEY WORDS: Pulpwood, saw logs, veneer logs, residue.

Our job at the North Central Forest Experiment Station is discovering and creating new knowledge and technology in the field of natural resources and conveying this information to the people who can use it. As a new generation of forests emerges in our region, managers are confronted with two unique challenges: (1) Dealing with the great diversity in composition, quality, and ownership of the forests, and (2) Reconciling the conflicting demands of the people who use them. Helping the forest manager meet these challenges while protecting the environment is what research at North Central is all about.